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DEPARTMENT OF ENERGY'S RADIATION HEALTH EFFECTS RESEARCH PROGRAM AND WORKING CONDITIONS AT DOE SITES

HEARING

BEFORE THE

COMMITTEE ON GOVERNMENTAL AFFAIRS UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

FIRST SESSION

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DEPARTMENT OF ENERGY'S RADIATION HEALTH EFFECTS RESEARCH PROGRAM AND WORKING CONDITIONS AT DOE SITES

WEDNESDAY, AUGUST 2, 1989

U.S. SENATE,
COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 9:35 a.m., in room SD-342, Dirksen Senate Office Building, Hon. John Glenn, Chairman of the Committee, presiding.

Present: Senators Glenn, Kohl, Roth, and Stevens.

OPENING STATEMENT OF CHAIRMAN GLENN

Chairman GLENN. The hearing will be in order.

Today's hearing is concerned with two critical aspects of the U.S. Department of Energy that have important ramifications for the future of the U.S. national security and public health policies. As events of the past year have made abundantly clear, DOE's nuclear weapons industry is in a very important transition period. The decision that we will have to make now regarding modernization and cleanup of the DOE weapons program will not only impact U.S. nuclear weapons policies, but also the health and environment of Americans around the country. I don't overstate this when I say for centuries to come.

Among the most important questions we will face deal with the workplace at DOE nuclear sites. What has been the occupational health legacy of the past four decades of producing nuclear weapons? We know it is not very good. From the very beginning of the nuclear age, scientists recognized its inherent dangers and enormous uncertainties about health risks, "The whole clinical study of personnel is one vast experiment," stated Dr. Robert Stone, head of the Manhattan Project's Health Division. "Never before has so large a collection of individuals been exposed to so much irradiation."

Also, as the DOE accelerates its environmental cleanup activities, larger numbers of workers will be encountering dangerous working environments. What steps are being taken to assure that workers at DOE sites are being protected from the various health and safety dangers inherent in nuclear weapons activities? The historical record provides little comfort that these questions can be objectively answered without some important changes being made in the conduct of DOE's occupational health and safety program. I believe Secretary Watkins is in the process of making those changes.

At the heart of this problem are the two competing missions of the Department to produce nuclear weapons and to assess their environmental and health impacts. The long-standing concern to avoid liability from radiation damage claims is still a significant force which we cannot ignore. It is a distinct force shaping some of DOE's health and safety policies.

Much like nuclear safety, DOE's worker protection and radiation effects research programs have, in the past at least, been subordinated to production. As the trend in litigation continues to go against DOE, the inherent internal conflicts within DOE can only intensify.

Now, to his credit, Energy Secretary Watkins is grappling with this problem. He has taken positive steps by initiating efforts to allow independent researchers access to data on DOE worker health records, and inviting the Occupational Safety and Health Administration to join DOE in inspecting DOE sites. This effort is clear from the so-called DOE tiger teams that asked OSHA to go along with them on some of their inspections. However, much more needs to be done.

Title IV in my proposed legislation, S. 1304, creates a Radiation Research Advisory Committee to oversee the conduct of DOE's radiation health effects research program, so that this important area of study can be made part of a broader public health agenda. DOE's radiation health effects research not only affects DOE, but also radiation standards affecting millions of Americans.

DOE has the biggest background in this area and the most information. The U.S. has assessed things like dental x-rays, health x-rays, any radiation that people come in contact with, but we don't have masses of data on some of the health effects of radiation. However, DOE has more background and information on these than any other place in the world. That is the reason why we think it should have broad base oversight to relate this information to all these other problems that may be unrelated to DOE is nuclear activities directly.

Rapid and effective access to DOE's workers health study databases by a wide range of qualified independent scientists is not only in DOE's interests, it is in the national interest. To make good policy and operational decisions, we need to know much more than we do about the biological effects of low-dose ionizing radiation.

Early and open access to data also, most acutely and poignantly, is in the interest of the workers and surrounding communities. DOE's data access policies must be broadened so that records about events in the past where Americans may have been put at risk are declassified and made available to the public. Good places to start are at DOE's Hanford facility in Washington, the Idaho National Engineering Laboratory, and the Rocky Flats facility in Colorado where health-related studies are being initiated.

Finally, I am convinced that responsible occupational safety and health policies can be achieved by DOE. And when those achievements are made, then I see no reason why workers at DOE should not be afforded the same rights of protection provided to all other workers in this country, both Government and private.

Thus Title II of my bill requires the Occupational Safety and Health Administration and NIOSH, National Institutes for Occupational Safety and Health, to inspect the DOE workplace. It is a double check, if you want to put it that way. And I know there has been some objection to this, but I would say that if DOE is on top of this, OSHA will not find any major problems. If DOE is not on top of the problems, then we need OSHA inspecting these plants. Either way, it is an excellent second opinion.

I have every confidence in Secretary Watkin's abilities, but I am concerned with the short tenure of the average cabinet secretary in Washington. And secondly, what will happen if a less conscientious DOE secretary in the future may allow DOE's nuclear program to slip back to the severe problems it has faced in the past and now faces.

Two long established principles of medicine and public health—"first, do no harm," and "informed consent"—need to be observed, if we are to be sure that DOE nuclear activities will not repeat the mistakes of the past. Otherwise, we make mockery of the term "national security" by failing to hold the nuclear weapons industry accountable to the very citizens it is supposed to protect.

Our hearing today is focused on DOE's occupational safety and health policies and its radiation health effects research program, and I welcome all witnesses this morning, including Secretary Watkins. Senator Roth.

OPENING STATEMENT OF SENATOR ROTH

Senator ROTH. Thank you, Mr. Chairman. I, too, would like to welcome Secretary James Watkins before the Committee, as well as our colleague and friend, Tim Wirth. And while the hearing today is focused on radiation health effects and working conditions at the DOE sites, I would like to make a few comments about the Secretary's first 6 months in office. They have indeed been a very busy 6 months.

In recent years concern has been raised in this Committee about the environmental and health hazards at the Department of Energy's nuclear facilities. Toxic and radioactive debris have been accumulating at various DOE sites for more than 40 years, yet we are only beginning to realize the sheer magnitude of the problem. Because the health and safety of the people who work in and live near these facilities is of paramount importance, swift and effective cleanup should take priority.

In this regard, I am very interested in the 5 year plan announced yesterday by the Department. It is a strong first step in the right direction. By specifically outlining the extent of the environmental damage at DOE facilities in this recently released report, Secretary Watkins has taken a major step in attacking the waste problem and restoring credibility to the Department.

Under the leadership of Secretary Watkins I anticipate a productive working relationship between the Committee and the Department of Energy. By working together on these issues, I believe we can ensure the safe and effective operation of our Nation's nuclear facilities.

So, Mr. Chairman, I welcome the Secretary and all other witnesses today, and I appreciate their being here.

Chairman GLENN. Senator Kohl.

OPENING STATEMENT OF SENATOR KOHL

Senator KOHL. Thank you, Mr. Chairman. I would like to begin by commending you for your many years of work on behalf of the health and safety of Americans who have worked at our nuclear weapons plants. I am proud to be a cosponsor of our Chairman's legislation to improve environment, safety and health conditions at our nuclear weapons facilities.

The need for drastic changes in the way we run our weapons plants has been evident for sometime. Scandals have embarrassed this Nation to the point where we have to ask ourselves which has posed a greater risk to the American public, foreign attack or our country's bomb production activities. Recent revelations about conditions at the Rocky Flats facilities in Colorado only add to the outrages which have been played out in front page newspaper stories during the past couple years. And this is nothing new. Just ask the people living near the Fernald plant in Ohio who have seen a higher incidence of cancer in their community and who have seen their property values plummet.

I want to commend Secretary Watkins for the bold and forthright manner in which he has attempted to reveal and correct some of the serious problems at the Department of Energy. He has attempted to lift the veil of secrecy which is largely responsible for the environment and safety problems in the first place. Along those lines, I applaud his proposal to make radiation exposure data available to independent researchers for the first time since it has been collected. That sounds like a good start, and I look forward to learning more about the proposal and the timing for release of this data.

Nevertheless, I have to say that despite the best efforts and contentions of Secretary Watkins, it will be a long time before the public is able to trust DOE in matters of health and safety. Public confidence must be earned, and it will take years of good deeds to erase the sins of the past. In the meantime, we have got to provide some assurance to the public that health studies and radiation research will be conducted with the utmost of scientific and professional integrity. We have to remove the apparent conflict of interest inherent in the DOE's dual roles of protecting employee health and safety and ensuring an adequate supply of weapons materials.

That is why we need to establish oversight authority allowing outside review of DOE's radiation health effects research. Senator Glenn's legislation would establish a review board headed by the Secretary of Health and Human Services, and I support that move. Many believe that we need to take this one step further by transferring all radiation research activities from DOE to HHS, and although I am not yet prepared to endorse this concept, I am certainly willing to listen to the arguments. If that is what it takes to restore our Government's credibility in this area, I am not adverse to the idea.

In my opinion, it is a sad day when the public cannot trust its Government to conduct thorough and unbiased health research, but that day has come. I will do everything I can to support Secretary Watkins as he attempts to restore public confidence in his Department's activities, and I look forward to learning more about our radiation research program from our witnesses here this morning.

Thank you, Mr. Chairman.

Chairman GLENN. Thank you very much.

Before we continue I have a statement for the record from Senator Pryor who was unable to attend today's hearing.

[Senator Pryor's statement follows:]

OPENING STATEMENT OF SENATOR PRYOR

Mr. Chairman, I want to commend you for holding this hearing on the Department of Energy's Radiation Health Effects Research Program.

Secertary Watkins has shown refreshing candor in his public comments addressing the shortcomings of the Department of Energy. I commend him for his openness, and I look forward to working with him on these important matters.

Mr. Chairman, in 1980 I looked at the Department of Energy's use of consultants and contractors and concluded that the Department had contracted out an enormous amount of its basic work. Frankly, I was not surprised to hear Admiral Watkins say that there are serious shortcomings in the official workforce at DOE. Back in 1980 DOE has contractors preparing its budget, drafting congressional testimony, and doing much of its planning.

From all accounts, Mr. Chairman, the situation has only gotten worse. In preparation for a hearing I plan to hold in early fall, I have had my subcommittee staff working for several months to update our information on DOE's use of consultants and contractors. Once again we find private companies drafting DOE's budget, writing congressional testimony and performing much of the basic work of the government.

Today we are focusing on some of the safety issues at DOE sites. It should come as no surprise that DOE delegates to private contractors the task of determining if DOE facilities are in compliance with health and safety regulations. It also should be no surprise that due to the extensive reliance on contractors, serious conflict of interest problems exist. The very firms performing the compliance determinations for DOE also work for the private nuclear power industry.

Mr. Chairman, as long as we continue to decrease the in-house capability to do inherently governmental functions, we are going to increase the delegation of sensitive tasks to private contractors. When this occurs to the extent it does at DOE, we are going to have serious problems with conflicts of interest.

Mr. Chairman, I again commend Admiral Watkins for openly discussing these problems and seeking additional in-house support to manage DOE. I also again want to commend you for your efforts to ensure that DOE, and in fact all, nuclear facilities operate in a safe and environmentally sound fashion.

EXAMPLES OF CONTRACTOR/CONSULTANT WORK AT DOE

A contractor performs vulnerability assessments for the DOE inspector general. Contractor also develops a security plan for the IG.

Contractors prepared the briefing papers for several key DOE programs that were used to assist with the transition between the Reagan and Bush administrations.

For several DOE offices, contractors assist in the preparation of the budget submissions both to OMB and to the Congress. These contractors also prepare the briefing materials and Congressional testimony.

For one DOE office that provides funds to innovative companies, a contractor does everything from answer the phone to handling Freedom of Information Requests.

Chairman GLENN. Our first witness this morning, when we are honored to have, Senator Wirth of Colorado, has a very personal interest in all of this legislation and legislation of his own, as well as the whole problem facing us. He has the Rocky Flats plant, of course, just outside Denver.

Senator Wirth, we look forward to your statement and welcome to the Committee this morning.

TESTIMONY OF HON. TIMOTHY E. WIRTH, U.S. SENATOR FROM THE STATE OF COLORADO

Senator WIRTH. Senator Glenn, thank you very much, Senator Roth, Senator Kohl, I really appreciate your allowing me to come by briefly this morning.

Mr. Chairman, imagine yourself as a worker at the Rocky Flats Nuclear Weapons Plant, you have been tested for health effects and that data is being collected by the Department of Energy. You are told that everything is okay; there's no problem. And you believe them. Not only do you believe them, you want to believe them because they are the people monitoring your health in your job, which is the support for your family and your community. You want to believe the Department of Energy.

Then what happens? Over a long period of time by public officials, private officials, and health officials, raise questions about what you are being told by the Department of Energy. With that come a slow but sure erosion of trust. Trust, as Senator Kohl said, is hard to earn but easy to lose. You trust the Department of Energy to tell you the truth about what is going on and to conduct a very clear and independent assessment of the impact of that plant on your health as a worker there.

To take it a step further, imagine yourself as the parent of children living a half a mile away from a plant like Rocky Flats, and you are informed that everything is okay; there's no problem. You want to believe that plant. You've invested in your life there—in you home, your family and your community. You want to believe that Rocky Flats is safe.

Then, as happened last spring, more than 70 FBI agents and related Federal officials raid Rocky Flats. They raid Rocky Flats because they believe that Rocky Flats has not been telling the truth. For months and months top news stories are that Rocky Flats has been implicated in all kinds of illegal activities—unpermitted waste storage, illegal disposal and incineration, past certification of compliance with State environmental laws, improper employee training and handling hazardous waste, and an unsafe working environment. The list of transgressions goes on and on and on.

Now, what are you going to believe—as a worker at Rocky Flats or as a parent of kids living near Rocky Flats—about what you've been hearing for the last 5, 10, or 15 years about the impact of Rocky Flats on your health and the health of your family? Are you going to trust them? Absolutely not.

Trust is the fundamental question that we are addressing today. I have great faith in Secretary Watkins. He, as we all know, has been a breath of fresh air in a Department whose mission, prior to January of 1989, did not include health, safety or the environment. He is trying to turn this enormous ship around.

But we are a Government of laws and not men. As you point out, Secretaries come and go and political leadership comes and goes, and it could take very little to return to the same old ineffective ways of protecting the health of workers and the public.

Consequently, Mr. Chairman, it seems to me that it is absolutely imperative that we move the epidemiological research out from under the bailiwick of the Department of Energy. How in the world can we ask the people who are working in those plants, who are living around those plants, to believe the health data of an agency whose job it is to make nuclear weapons, not conduct health research. DOE's track record in health research has been less than admirable. It seems to me that what we have now is the situation of the fox guarding the chicken house.

What I think we ought to do is make a very clear separation, of health and production, and that is the thrust of my legislation, Mr. Chairman, S. 972. You are familiar with that legislation. You and I have worked together on this from my days in the House of Representatives and here on the Senate Armed Services Committee, and I know how clearly aware you are of the problems that we face. The legislation which I am offering transfers authority to conduct epidemiological studies of the effects of radiation from DOE to the Department of Health and Human Services and creates an independent—not a DOE sponsored, but an independent—advisory panel to assist with developing reliable data and ensure protection of workers and citizens.

I hope, Mr. Chairman, that we can this year take very firm and clear action. The public who works in these plants, the public around these plants, the American people ask it of us. I am sure that Secretary Watkins and the Department of Energy is saying that is going too far, it seems to me that is the minimum we ought to do is make this separation.

I have a full statement which I would like to include, if I might, in the record, Mr. Chairman.[1]

Chairman Glenn. Without objection it will be included.

Senator Wirth. And I greatly appreciate being here, being with you, and your allowing me to testify. Thank you.

Chairman Glenn. Thank you, Senator Wirth. I know of your personal interest. You and I have talked about this whole thing many, many times and you are concerned about the whole country, all the sites, and not just Rocky Flats. And we are certainly going to look very carefully at the legislation.

Senator Roth, do you have any questions of Senator Wirth?

Senator Roth. No, I don't.

Chairman Glenn. Senator Kohl?

Senator Kohl. No, Mr. Chairman.

Chairman Glenn. Senator Wirth, thank you.

Senator Wirth. Thank you, Mr. Chairman.

Chairman Glenn. Our first witness this morning is the Secretary of Energy, the Honorable James Watkins.

Mr. Secretary, we look forward to your testimony this morning. We appreciate your being with us this morning. If you would introduce your colleagues there—I do not have them listed on my sheet here—for the record, so we will know who is at the table. If you would introduce them for the record, we would appreciate it.

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[1] See p. 59.

TESTIMONY OF HON. JAMES D. WATKINS, SECRETARY, DEPARTMENT OF ENERGY, ACCOMPANIED BY JOHN MEINHARDT, ACTING ASSISTANT SECRETARY FOR DEFENSE PROGRAMS, PETER BRUSH, ACTING ASSISTANT SECRETARY FOR ENVIRONMENT, SAFETY AND HEALTH, AND ROBERT GOLDSMITH, PH.D., DIRECTOR, EPIDEMIOLOGIC RESEARCH PROGRAM

Secretary WATKINS. Thank you, Mr. Chairman. Accompanying me today are Mr. John Meinhardt on my far left, Acting Assistant Secretary for Defense Programs, Mr. Peter Brush, sitting on my left, Acting Assistant Secretary for Environment, Safety and Health, and Dr. Robert Goldsmith, the Director of DOE's Epidemiologic Research Program.

Chairman GLENN. Fine.

Secretary WATKINS. Mr. Chairman, I do have a rather lengthy formal statement that I have presented to the Committee. I would like to ask that that be entered into the record.[1]

Chairman GLENN. Without objection, it will be included in the record in its entirety.

Secretary WATKINS. This will be a summary of that.

Mr. Chairman and members of the Committee, I very much appreciate this opportunity to come before you today to discuss the Department of Energy's radiation health effects research programs and other related issues. Mr. Chairman, in your letter of July 14th you requested that I address the following issues—DOE's epidemiology program and my recent initiatives in that area.

And by the way, I would have to say, Mr. Chairman, on about the 1st of February, a month before I was sworn in, we discussed the very serious problem relating to lack of epidemiology programs within the Department as the first order of business. And I learned this the hard way during the AIDS Commission when I saw a similar problem within CDC and its baseline for doing the kinds of work necessary to understand another kind of an epidemic, but certainly it sensitized me to the importance of this area and really gave me the impetus to move out expeditiously in an area that was almost a void in the Department, save one person.

You also asked me to look at dose reconstruction activities that are underway at the Hanford and Fernald sites. You also asked for the declassification of documents relating to dose reconstruction studies, and for me to address DOE's FDA approved use of drugs known as chelating agents. And the responsiveness of DOE to radiation exposure guidance proposed by the Environmental Protection Agency.

I am particularly pleased to have the opportunity to address the Department's epidemiologic research activities and my recent initiatives, as I believe these activities are of crucial importance to the successful fulfillment of the Department's responsibility to protect the health of both its employees and the public at large. Although I believe that we have the foundation for a comprehensive epidemiologic program at DOE, I must tell you that I was not pleased with the condition in which I found the program when I assumed office last March. It is buried deep within the bureaucracy, it is understaffed, underfunded, and underutilized.

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[1] See p. 62.

The program has some significant flaws, and my recent initiatives in this area are intended to correct these flaws. The epidemiology program at DOE historically has suffered from lack of attention by the senior levels of DOE management. This lack of attention is vividly demonstrated by the fact that DOE has had only one full time professional permanently assigned to oversee all of the epidemiologic research that the Department supports, which is extensive. One person, regardless of how able he or she is, cannot effectively manage a program of the complexity and magnitude that DOE's epidemiologic research activity should represent.

As an interim measure, I have instructed the Director of the Office of Energy Research to detail additional personnel to the program. Because I know that I need the assistance of independent experts to properly reorganize the program, I have had to curb my instinct to immediately restructure the program and dramatically shift resources myself.

After I receive the report of the Special Advisory Committee that I have chartered to evaluate DOE's epidemiological efforts, I will address the long-term staffing needs of the program and ensure that the needed personnel are permanently assigned there. In fact, one of the principal tasks of this advisory committee is to develop an appropriate staffing plan and recommend adequate funding levels. Although our own contract scientists use raw DOE worker data to construct their epidemiologic research, I am concerned by the inaccessibility of this same data to the rest of the scientific community.

Currently researchers who are not directly affiliated with the Department cannot gain access to the worker data that is owned by DOE or its contractors. This situation is not in the best interest of science—that is, it is not accessible by other scientists—it is not in the best interest of the Department, because it lacks credibility, and it is not in the best interest of, most importantly, our workers, because they feel that they are not receiving the fullest examination that they are due. This is an unacceptable situation and I am in the process of changing it, as you know.

I have mentioned a few of the problems that exist within our epidemiology program, and before I explain how I intend to correct those problems, it may be useful for me to address the issue of why DOE should be involved in epidemiological research at all. I am firmly committed to ensuring that the Department of Energy actively pursues epidemiologic research on the human health effects of energy generation and use and DOE facilities operation. The DOE mission is focused on energy generation and use. We operate the facilities in which this mission is carried out and we employ the people who make it a reality. There is no other agency within the Federal Government that is more appropriately positioned to conduct epidemiological research in the energy field.

As an employer, DOE has a moral and ethical responsibility to monitor the health of its workers in an effort to ensure that all potentially harmful effects or aspects of the work environment are controlled. Epidemiologic surveys represent one way in which DOE meets this responsibility.

I am resolute in my belief that the responsibility for the health and safety of DOE workers must be directly assigned to DOE and implemented through a clearly delineated line management structure. Epidemiologic surveys of our work force represent a key element of our programmatic efforts to successfully meet this obligation.

I would have to say as an aside, Mr. Chairman, that it is no different from all of the other areas in which I am trying to instill now the feeling of accountability and responsibility within my own line managers for all aspects of our work—environment, safety, and now, health. And I do not think this has been done well and that is what I am trying to do. So irrespective of outside oversight groups, I have to establish my own responsibility lines inside so that we live and breathe environment, safety, and health every day that we operate our facilities. And that is why I feel very strongly about the fact that we must retain the accountability and responsibility to this Committee and to others, to our workers, and to those who live around us in this regard. That is the first order of business.

In addition to DOE's commitment to protect the health and safety of its employees, the Department has, as an inherent part of its mission, a legitimate interest in the health effects that result from low-level exposures to ionizing radiation and to chemical carcinogens during nuclear materials production. I recognize that DOE must take aggressive measures to enhance its epidemiologic research activities to ensure that all facets of the program represent excellence. And I have initiated a four point program to accomplish this goal.

First, I am establishing an independent evaluation of DOE's current epidemiological activities and guidance on how the program should be restructured from recognized experts in the field. A Special Advisory Committee comprised of individuals who are experts in such areas as public, environmental and occupational health, epidemiology and research standards has been chartered. This Committee, as a matter of fact, is made up of nine members, three State health officers, two professors of public health at major universities, one professor of environmental health from a major university, one professor of occupational medicine from a major university—in this case Yale—one vice president of a major national medical society, and an assistant director of occupational health from a major labor union.

The Committee has been given a broad mandate to scrutinize virtually every aspect of DOE's epidemiology program. Their charter charges them with an examination of the goals and objectives of the research program, the management and reporting structure of the program, the full-time equivalents and budget resources allocated to the program, both internally to DOE and externally to contractors. The use of contract scientists for ongoing and special projects, the quality control mechanisms in the program, including data completeness and accuracy and data management, archiving and access, for example.

The utility and feasibility of transferring the epidemiologic research function, including the necessary data to another entity. Maintenance and access to related records such as exposure incident files, material standards records, facilities design information belonging to DOE or its contractors, current and proposed mechanisms for determining epidemiologic data release policies, including controls on raw data, work in progress and completed analysis.

Current and proposed mechanisms for the storage of DOE epidemiologic data, including the establishment of a comprehensive data repository.

DOE's response to the data related request of the Three Mile Island Public Health Fund. And finally, the long-term role of the National Academy of Sciences Committee on Radiation and Epidemiological Research Programs.

It is my intention then to use the work of the Committee as a basis for a significant reorganization of our epidemiologic program. I have been reviewing a list of potential Committee members and I am impressed with their qualifications and I am looking at an applicant pool that consists of state health directors, as I announced, and other prominent individuals. I will announce the full membership of this Committee by the end of this week.

I have requested that this Committee proceed on an expedited basis. I expect that they will conduct their first meeting just after Labor Day. To make their work relevant to the budget process, I will request an interim report that addresses budget and staffing matters by November 1. I expect a final report that addresses the rest of our epidemiological research activities by March 15th next year. When it is completed, I will send a copy of this report to this and other interested Committees of Congress so that you can review it for yourself.

I am pleased that Kristine Gebbie, Administrator of the Oregon Health Division, and one of the most respected individuals in the public health community today, has agreed to chair this Committee. She and I worked together before on the Presidential Commission on the HIV Epidemic, and I am certain that she will lead the type of thorough and independent evaluation that I need in order to appropriately restructure the program. She is a past President of the Association of State Territorial Health Officials, and was cochair of their own AIDS committee.

Second, at my request the National Academy of Sciences (NAS), as of June 1, 1989 has established a standing Committee on Radiation Epidemiological Research Programs to provide the Department with independent scientific advice. This NAS panel is distinctly different from the Special Advisory Committee I just mentioned. While the Advisory Committee will focus its attention on policy issues such as the program staffing requirements and organizational structure, the NAS Committee has been formed to provide the epidemiological program directly with scientific advice, a sort of ongoing peer review regarding the best means of conducting quality epidemiological research. The NAS has appointed members to this Committee and they are scheduled to hold their first meeting on the 18th and 19th of September.

This standing Committee has four primary functions. It will advise DOE on the status of its epidemiology program, with particular attention to its current status and future direction. It will advise us on the creation of a comprehensive epidemiological data repository. It will assist us in developing protocols for the use of such a repository once it is operational, and it will review and evaluate independent research proposals.

Third, I am committed to the establishment of a comprehensive epidemiological data repository that will be used for the storage in a computer based format of all epidemiologically relevant information on approximately 600,000 present and former DOE contract employees. The purpose of the repository is to provide any qualified researcher, as determined by the protocols established by the National Academy, easy access to DOE's epidemiological data.

No such repository exists today. This will be a difficult task because it involves the compilation and examination of millions of individual documents, but it is a project that must be undertaken. Current plans call for the completion of this repository by the end of 1995 at a total cost of $36 million. Further, realizing that the completion of the repository will take at least 6 years, the DOE is working with the National Academy of Sciences Committee to develop criteria that will allow independent researchers access to the same raw data that DOE contract scientists now use to conduct their studies.

There had been some confusion about this point and I want to make it clear. The NAS Committee, not DOE, will be the body that determines who is and who is not qualified as a researcher and whether or not the methodology that is proposed is scientifically sound. Once the NAS Committee has determined that both the researcher and his or her proposed study meets its criteria, access to the raw data will be granted. I will not allow either institutional or ideological affiliation to enter into that process.

It should be noted that the creation of the data repository will significantly ease the burden of raw data collection and assembly, which is one of the reasons that the repository is so important. And I am committed to establishing a state of the art epidemiological research program. The creation and operation of such a program is the only responsible course of action if DOE is to effectively protect the health and safety of its employees and the public at large.

Regarding the classification of weapons-grade plutonium production information at the Hanford site, the Technical Steering Panel of the Hanford Dose Reconstruction Project has recently requested DOE to reclassify the Hanford site production information to assist the project's peer review and public acceptance. Some members of the panel have access to classified information, but it is believed that public acceptance would be heightened by the requested declassification.

I met with Dr. John Till, who is here in the room today with us, chairman of the Technical Steering Panel, to discuss his declassification request and its importance to the study. Having chaired my own panel that was examining a complex issue in a public setting, I am extremely sensitive to Dr. Till's desire to make all source documents available to the public as a means of enhancing the credibility of the study. I am committed to declassifying as much information as possible as long as it will not truly harm the national security interests of this Nation and I will certainly open up my review of that to you, Mr. Chairman, to, I hope, convince you also of the same conclusions.

The protection of plutonium production information has been one of the most fundamental components of our classification policy since the first days of the Manhattan Engineer District. Certainly in the postwar period and as the U.S. stockpile was growing, the quantity of plutonium produced was directly related to the number of weapons and needed to be classified as secret restricted data for national security purposes.

Weapons-grade plutonium production information would accurately provide a potential adversary information regarding U.S. nuclear weapons, deployment capabilities and ability to increase deployments in a period of tension. As the weapons stockpile became diversified, the linkage between the inventoried plutonium and the weapons stockpile has changed, but the relationship still exists. Therefore, revealing this information could be inimical to U.S. national security and we need to proceed cautiously but aggressively.

Nevertheless, since this information has true value to the public, it is time to reconsider classification policy, and we are undertaking a study to determine what information can be declassified without undue risk to national security. I will review this study personally. I want to be sure that its conclusions are based on current thinking that considers all of the techniques that are currently used to estimate production capabilities and are not just based on some outmoded ideology and production assumption.

If, after I review the declassification study, I determine that the release of the documents pose no threat to national security, the concurrence of the Department of Defense and National Security Council will be required. Should those agencies concur, the best estimate that I can give you for the actual release of these documents is January of 1990. I will continue to work with Dr. Till in an effort to provide the Technical Steering Panel with as much declassified material as is prudently possible.

This completes my summary of the longer statement, Mr. Chairman, and I will be willing to open myself up now to questions.

Chairman GLENN. Fine, thank you very much. We will go on a 5 minute questioning rule here this morning so we can kick it back and forth a little.

Mr. Secretary, this morning the Washington Post reported that EPA in July criticized your proposed 5-Year Plan on the grounds that it was developing cleanup priorities that are not in compliance with environmental laws.

Do you take exception to that, or is there validity to that criticism?

Secretary WATKINS. Well, Mr. Chairman, it is my strong belief that the kind of consent agreements, for example, that we have just negotiated with the State of Washington, that we have also just negotiated with the Governor of Colorado, and more to follow, are precedent setting. That is, we sit down with EPA regional individuals, with the State officials, with our own people. We know what the situation is and our desire, of course, is to get into compliance with the law.

So I think there is a definitional problem here that compliance we know is not being met by the Department of Energy today. We simply are not in compliance with laws at some 27 activities. But we are building consent agreements with all of the agencies involved in this and with the consent of the States to put together these plans. And that is the basis of our 5-Year Plan. And so we think it is fiscally responsible. We think it makes sense. It involves totally all agencies and States, and therefore if we sit back and say, well, there may be another national priority system that is superior, it is not clear to me how you do that overnight.

We have got to start, it seems to me, with a real cleanup program, working with the States, and with individuals from EPA regions involved in this effort. And so I understand there is criticism there, we knew that before we put out the plan. But we have a 90-day review period and if, in fact, we cannot reconcile this, then we have, obviously, a problem.

We think it is a very fair plan. We think it is very—it has been lauded by the States and, we thought, in many ways lauded by those at the Federal level that have to deal with those things in a fiscally responsible way. And we are trying to do that now, coming out of years and years of neglect, knowing that we are out of compliance and we want to get into compliance with the best ramps possible, on the highest priority contaminants, and that is the way that the current plan is structured.

Chairman GLENN. In trying to develop uniform cleanup standards, does this in any way subordinate the role of the States? The States have very special responsibilities under environmental protection laws. They have these agreements that they administer, in effect, State laws. We have gone through a series of things in Ohio with our Attorney General there in Fernald that you are very much aware of in carrying out some of the Federal mandates that are then carried out by the States under agreements that are signed there.

Now, does what you are talking about with respect to developing uniform cleanup standards have the effect of minimizing or subordinating that role of the States in any way?

Secretary WATKINS. We do not think so, Senator Glenn. We have, as I have already said, negotiated with two Governors who are very, very pleased with the responsiveness of this plan to their needs.

Now, Mr. Duffy, my Special Assistant for Waste Management, is with Governor Celeste this morning dealing with our Ohio situation, and Fernald specifically.

So I think that out of that you will see a very responsive department trying to work out of a mess that we are in and in a way that is completely categorizing every contaminant by priority one through four, and we are going to go after those in a very serious way. And that is what is in the ramp up from $1.7 billion in fiscal year 1990, which Congress has helped us a good deal on, up to the $3.7 billion over the years to characterize these sites, to get down to every single contaminant, get them all on a graph and get rid of them in order of priority.

We think that is a very responsible approach to the entire problem, and I think that Governor Celeste will find that his agreement with us will be every bit as responsive as those of the two States with which we have already negotiated.

Chairman **Glenn**. Was your 5-Year Plan coordinated with EPA while it was being formed—was EPA in on the formation of this or are they just going to be in on the commenting only?

Secretary **Watkins**. I do not know the degree—I did not realize we were going to have a discussion on the 5-Year Plan here, Senator Glenn. I do not have Mr. Duffy here, and some of my people. I do not know the degree. I can not validate who contacted whom in EPA.

It is my understanding that EPA has been involved, they have expressed their concerns about setting up some kind of a national waste priority system that they would engage in, but my feeling is I do not think the track record on such a thing like the Superfund has been any better than ours. They have only cleaned up a handful of sites, so I think to lean on some kind of a national program like that at this time is premature.

I think we are doing something that is very practical and people can see that we are really doing something. It isn't just some Federal thing we have jammed down the States' throats. The States are involved with us, with all the various agencies that have been affected here, and I think in a very forthcoming fashion, something they have not seen before.

I have had long discussions with Governor Romer on this issue because of the serious situation at Rocky Flats. And I think you will find that he feels that what we have done is very responsive to his needs.

Chairman **Glenn**. You are right, the 5-Year Plan was not to be the focus of the hearing this morning. We undoubtedly will get into that a little later in the year after people have had a chance to get into it a little more, but it is much in the news right now and being commented on and this was an opportunity for us to ask a couple of questions about the plan's general direction.

Your announcement of the formation of the Central Epidemiological Data Repository, CEDR, is an innovative and welcome step toward making DOE more accountable for its nuclear weapons complex effects on workers and surrounding communities.

Can you tell us a little bit more about how it will work, how much it will cost? The $36 million, was that the cost for CEDR you indicated? Will this include all of DOE's facilities? Are there any exempted from having to put information into this repository? Give us a little more detail on that, if you could.

Secretary **Watkins**. Let me give you the general breakout of the costs in the various four parts of the program. The independent review panel that we are establishing that I announced in my statement is going to cost about $750,000 and will be started here late this month or early next month.

The National Academy of Sciences Committee will be about $290,000, and I mentioned when we will be starting, and that will be in the very near future. The establishment of a comprehensive data repository, as you mentioned, was $36 million over the next 6 years. We expect to be able to analyze and put into that repository 250,000 workers' records by about January 1991, and we think that that is going to be a major first step to indicate that we have some credibility to that program.

So those are the costs. We will exempt no one. Our plan is to go for all 600,000 potential workers to be covered over this period of time, and to move expeditiously in a way that demonstrates the openness of this system and availability of that system. And by October 1st of this year we expect the NAS will come up with criteria for access to the raw data for other scientists, and we hope to get that underway at that time under a protocol that they will establish.

Chairman GLENN. My 5 minutes is up, but just as one little follow-up on this. It would be your intention, then, to go back and put all the worker records clear back as far as there are any records of whatever nature——

Secretary WATKINS. Back to 1944.

Chairman GLENN [continuing]. Into the whole program.

Secretary WATKINS. That is as far back as we go with any kind of records that are useful, yes, sir.

Chairman GLENN. All right. Good. Senator Kohl?

Senator KOHL. Admiral Watkins, this Committee's staff has prepared a bibliography of past health studies undertaken by the DOE, and apparently there are 30 papers which indicate excess risk of cancer and other diseases and contamination among DOE workers and members of the public. While these studies may not prove that DOE activities are causing these problems, they do indicate that there may be an industry-wide health problem among DOE workers.

What are you doing to connect this information to DOE's environment safety and health professionals?

Secretary WATKINS. Well, Senator Kohl, that is the situation DOE is in right now. You have outlined it very well. We just negotiated a settlement in a recent case at Fernald. And clearly it is a situation in which DOE has gotten itself where allegations of these kinds of things cannot be defended one way or the other.

So we are very vulnerable right now in not having the database we need to really clearly say what we are doing in the occupational worker area as well as in the community surrounding us. So we picked two communities, Fernald and Hanford, and that work is underway to deal not only with the workers but also the people around DOE sites. We need to get those footprints, get the dose reconstruction initiative going, and do all of the various studies, such as the risk assessment, that lead up to the building of this information for the repository, which is a large number of individuals who then have to be traced.

We have to find out where we are. We have to talk to them. That takes a lot of time, it takes a lot of money. So that is why we are doing it. You cannot get out of a situation like this rapidly. You have to really set up a program and do it. This should have been done years ago.

So I find myself in agreement with this Committee on almost everything. Senator Glenn and I have discussed this time and time again and we have no real fundamental differences in what the problems are and what we have got to do about it. I am trying to run right along with this Committee, working these problems right with you, and I believe that we are seeing, even in the bill proposed here by Senator Glenn, that we have within the actions underway most of those areas well covered in what we are doing.

So we have to run in parallel. We do not want to wait for a law to tell us to do something right, we ought to be doing it right, because it is the proper thing to do. We want to run a department in a sensible way to dealing with these kinds of toxic and hazardous wastes.

Senator **Kohl**. Admiral Watkins, you have said a great deal during your tenure as Secretary of Energy about the need to reform the management structure at DOE. You have emphasized the need for clear lines of authority between yourself and site managers at the weapons plant. And I understand that you believe that these changes will enable the Department to effectively carry out its radiation health effects research activities.

I do not dispute that a top-notch manager like yourself can probably reform DOE's entrenched bureaucracy in such a way that it can get the job done right. But isn't what we are dealing with here, Mr. Secretary, a matter of public perception? Isn't the real question one of restoring public trust in the credibility of this Department's activities?

It seems to me that we can make all the changes we want and talk about them as much as we want, but it will not make a bit of difference if the American people still do not trust the DOE.

In light of that situation, doesn't it make sense to give some outside body the authority to oversee DOE's radiation and health research activities? Won't that help to provide the appearance of impartiality, of integrity and objectivity?

Secretary **Watkins**. I think it does, Senator Kohl. And I think that is what this Special Advisory Committee will probably come up with. I just think it is premature to put what I would call the cart before the horse. We need people actually doing good solid health physics work and be sensitive to the health of our workers right on the scene all the time.

The oversight is useful—however oversight is going to come in right now and say, "It's a mess," and I know it is a mess. I need the people to clean it up more than I need oversight right now.

So what I would like to do is, I would like to have this Advisory Committee look at everything we are doing and then make a recommendation and give me a chance next year to get back to this Committee and decide what should constitute the best oversight group. It should be an outside activity. We are doing that with the Defense Nuclear Facilities Safety Board. We are doing it with the Ahearne Committee, which basically, while I own it, is very independent. We have an Energy Information Agency, also very independent, established by Congressional directive. I like that. And so I do not have any problem with it.

My biggest problem is that oversight is not going to solve it tomorrow. I have got to get in and get my organization to solve it, and then we will know what kind of oversight skills may be necessary, with all the things I am doing, to be able to look in and do the job, both for the Congress and us, to gain the credibility.

I am just asking for time to let some of the dust settle. I have got a lot of variables that I am trying to solidify now into some kind of a cohesive program. The development and implementation of the 5-

year program, or the 10-point program will do a lot of things in the organization.

I need a little time for you to assess that and perhaps listen to my Advisory Committee report early next year and then make a determination. I am asking for the Committee to defer this until the next session of the Congress and then deal with it, and by then I will be ready for it, because I believe an oversight committee is necessary. I am not sure that the charter in the bill is the right charter for that oversight committee, but it clearly should be outside of DOE and should be made up of the proper people to take a look in here and report in all directions, much like the Defense Nuclear Facilities Safety Board.

Chairman GLENN. Thank you. Mr. Secretary, on April 24th of this year Senators Mitchell, Wirth, Gore and myself sent a letter urging you to provide complete data to the Three Mile Island Public Health Fund. The reason that we encouraged you to provide them with swift access was because of the Fund's unique situation. The principal investigator, Dr. Alice Stewart, is already in possession of the majority of the information, and needs only some of the additional mortality data.

Will they have access to that data soon? Will they get what they want? You are being very open about information to all these people so everybody knows what has been going on. When can they get that information?

Secretary WATKINS. If I may, Mr. Chairman, I would like Dr. Goldsmith to address that issue in detail.

Chairman GLENN. Dr. Goldsmith.

Dr. GOLDSMITH. Mr. Chairman, we did provide the Fund with copies of data analysis files from three completed studies with cause-of-death information deleted because we cannot provide that information under the current agreements that the DOE contractor scientists have with each State. We have given the Fund a list of the States, provided them with copies of the agreements over a year and a half ago, and all they have to do is get approval from the States to release that data, and we will be glad to provide it to them.

The raw data itself, which is being made available with the assistance of the National Academy of Sciences, will provide them with a means for accessing all of the worker data they feel is necessary, rather than depending on whatever assumptions have been made by DOE contractor scientists. They can then go to the States and request the death certificate information. The centralized epidemiological data resource will include, we hope, information from these death certificates. We will be required to renegotiate agreements with the States so that this information can be provided. So there really are three avenues for them to get that kind of data.

Chairman GLENN. One of the areas at issue, I believe, was the information on Rocky Flats. Was that released, or is that one that is a problem under the States agreement, as you indicated?

Dr. GOLDSMITH. Well, to the best of my knowledge, I was under the impression that that data tape had been released to the Fund. We are checking. If not, we will certainly provide it to them.

Chairman GLENN. All right, fine. We can check on that one, then. During the Committee's investigation of DOE radiation health effects research program, staff discovered a research program begun at Los Alamos in approximately 1959 and run until sometime in the late 1970s. The program consisted of tissue samples taken from bodies undergoing autopsy around the country.

What was that program designed to do? Is it still going on? Did the next of kin provide permission? How was that one run?

Dr. GOLDSMITH. Well, that program is under the Uranium-Transuranium Registry. It provides for workers to essentially will their bodies to science. So they have provided the informed consent while they are still alive. And then workers who have high body burdens of these radionuclides are then autopsied upon their death. And from this we can find out the fate of radionuclides in the body. It is really unique in this country to find out exactly what happens, what tissues could be affected by ingestion.

Chairman GLENN. It was my impression that this was not workers, that this is some of the general public around the country and next of kin quite often did not even know that these samples were being taken; is that correct?

Dr. GOLDSMITH. As far as I know, it has only been workers.

Chairman GLENN. Mr. Secretary, just a comment on the committees you are forming. I do not disagree with those at all. I encourage you to do exactly that. One of our problems here though, and what my legislation addresses in part, is the difference between you forming a committee that a subsequent Secretary of Energy could un-form and what we lock in statutorily.

The history of DOE is what you are trying to reverse—and I support everything you have done in that area, I think you are trying to reform a mindset that is unhealthy and you have said that publicly and I have supported that wholeheartedly. But one of the problems is that with the track record of DOE and its predecessors, going back over some 38 years of our nuclear weapons industry in this country, it is not a very pretty picture of what was covered up. And we tend to want to set something up statutorily that will work permanently, whoever happens to be in your position.

You indicated that you are already taking action in this area.

Do you then have any objection to making some of these things statutory, as I would propose with my bill?

Secretary WATKINS. My only point is this, Mr. Chairman, I agree with you that I think that our track record warrants the kind of attention that you have given in your bill. What I am asking, however, is that we are both going through a very serious transition period. One, you have looked at a department that you have for years said is not running things right. You are trying to effect change. I have come in only in the last 5 months trying to effect the same changes. We are the same wave length trying to do a job.

What I would like to do is get some of these things in place and get some of the variables eliminated so when you pass your legislation we can say we have all pretty well gone through the mill together and that we have the long range good of the country at heart. We are not in a period of confusion and chaos as we set up this new system that would give you less than the best bill.

So I think that as long as you feel that I am moving in the direction that you have indicated, if you will give me, say, until next year to make a thorough report as to where we stand and what we would recommend to you, then I think we may come up with the best charters, the best program, and go ahead and lock it into statute. Then I think we have got the best of all worlds.

So if I do not die before next year, I plan to be here as long as you pay me the exorbitant wage that I am getting as Secretary, and if I can stand it and live that long, we will be together here next spring.

Chairman **Glenn**. After our debate on the floor last night, about one o'clock this morning, on pay, that is another subject we can talk about for a couple of hours here this morning.

Secretary **Watkins**. I do not get any benefit out of that, Mr. Chairman.

Chairman **Glenn**. No, though that is one that we do have to address and I am on the other side of the fence on that, because I do think you should be able to hire good people and pay for them. But, I also have the responsibility of making sure that the rest of Civil Service is dealt with fairly, too. And so we are at opposite ends of that one. We could get into detail on that one later.

You have invited OSHA in——

Secretary **Watkins**. Yes, sir, we have.

Chairman **Glenn** [continuing]. To go with the tiger teams?

Do you have any objection at this point to doing away with the exemption that DOE has enjoyed all these years where OSHA was not permitted? What if we just repealed that exemption and said, okay, OSHA goes into the DOE plants like any other Government plant or any other civil plant all over the country. What is wrong with that?

My view is this, I think they can help you. I do not see that they are on opposite ends of the log from you on this at all. I think that they can be working together with you, and my view is if you have cleaned things up with their help so that OSHA goes in and says it is okay, that is fine. If they go in and say that it is not okay, then we need OSHA in there looking over your shoulder. So either way I do not see any problem with OSHA going in.

Do you still object to OSHA inspections?

Secretary **Watkins**. I would like to enter for the record my letter to Secretary Dole of July 25, 1989 in which I asked her to do just that and spelled out in detail what we wanted OSHA to do right away.

And the reason we wanted them on the tiger teams was that, frankly, when we went into Rocky Flats and took a look, we had 26 of our own DOE top level people, people like Peter Brush here went in, along with the criminal investigating team from the Department of Justice. But we were looking at our own operational practices. And frankly, occupational safety, while it is the policy of the Department to comply with the OSHA rules, in fact we are not, and there is no teeth in the program to see that we do.

And so my belief is that they should be allowed in. We need to work with them and we need to get ourselves up to occupational and safety health standards that they set.

When I was in the military on the Defense side we did, in fact, have OSHA inspectors on our Defense facilities, and that was a major change in the late 1970s to shift to the OSHA involvement with us. And they are heavily involved in DOD activities, and I do not see any reason why they should not be in ours.

Chairman **Glenn**. See, we tend to think in these hearings and in talking about this that at DOE nuclear weapons facilities all problems stem from radiation. What can OSHA do there?

Well, there are a hundred different things that OSHA looks into quite apart from radiation. One of them was pointed out. In 1988 GAO reported that DOE willingly gave a waiver of OSHA asbestos regulations to Rockwell, the main contractor at Hanford, and its successor, Westinghouse. If contractors used their own facilities instead of the Government's they would have had to comply with those regulations.

So here we do not have any doubt about the carcinogenic nature of asbestos. There are a whole host of other things that do not have anything to do with radiation that I think OSHA should be in on. I was not aware of your letter, and I am glad to hear of that and I hope she takes immediate action on it.

Secretary **Watkins**. We are taking immediate action, and I would like to enter this into the record because I think it is a very important new milestone in DOE's relationship with the Department of Labor in getting up to speed on occupational safety.[1]

Chairman **Glenn**. My time is not only up, but that sound you heard in the back of the room, the buzz on the clock up there, indicates we have a vote. So we are going to have to go to the floor in a couple of minutes and vote. So we will let Senator Kohl get his questions in and then perhaps we can have a break and you may leave, unless you wish to stay.

Secretary **Watkins**. Well, I would like to leave by not later than 10:45 if it is possible. I have my experts here that will be able to stay as long as you need.

Senator **Kohl**. I just have a single question I would like to ask. Mr. Secretary, how much do you know about the quality of past DOE worker health studies and radiation exposure data? Have you talked in any detail with independent scientists completely outside of DOE about whether or not the studies and the data collection were conducted with a high degree of scientific accuracy? And what about the records which were kept on past exposure and related health effects? Are those records complete to the best of your knowledge? Has any information been destroyed? Has your information been confirmed by anyone outside DOE? And do you have any knowledge or information of records ever being altered?

Secretary **Watkins**. It would be very difficult for me at this point Senator Kohl to answer all of those questions in detail. I would like to answer those for the record, but I would also ask Dr. Goldsmith if he would attempt to answer some of those questions right here on the spot. And then I would like to answer that in some greater detail in response for the record.

[The information referred to follows:]

The DOE worker health data and the radiation exposure data are evaluated for completeness and accuracy before being used in epidemiological studies. The fact that radiation monitoring practices and programs have changed over time and have differed between facilities has also been taken into consideration. Each group involved in the studies has its own independent advisory committee, and the studies are reviewed outside of the DOE for publication in peer-reviewed journals.

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[1] See p. 304.

For the populations that have been evaluated to date, all available radiation monitoring data have been used. In the very early days (1940's) not everyone was monitored. Since the 1950's, external exposure monitoring has been extended to all DOE radiation workers, as this became common health physics practice in industrial and laboratory settings.

Since 1964, when the DOE epidemiological studies were intitiated, there has been careful retention of all pertinent records. Some older records such as security questionnaires, that are normally automatically destroyed, have been copied on microfilm, so that the information has been preserved. Some of the records from the 1940's may no longer be available.

The epidemiological studies underway are conducted by DOE contractors, and in this sense they are outside the DOE. There has been no totally independent study, but as explained elsewhere, provisions are being made to make the DOE data available to qualified independent investigators. To our knowledge there is no evidence that any of the data have been altered.

Dr. GOLDSMITH. Senator, I would like to say that the Special Advisory Panel that will be looking into the program will be looking just at those issues. We are making amendments to the existing system of records notices so that they will be able to actually go and examine the records and see what was done with them. The studies have been peer reviewed. The results are always submitted to peer review scientific journals. Each study has its own advisory committee. And based on all of these things, to the best of my knowledge, the studies have been conducted with the highest scientific integrity and I believe using correct and appropriate methodology.

Senator KOHL. I think it is an important question.

Secretary WATKINS. It is a very broad question. I think it needs a thorough answer. You heard my tasking and the charter for this Special Advisory Committee, and they are going to have to dig into this, because one of the reasons I am establishing the Committee is the same reason that I established a very special group of 16 of the best nuclear engineers in the Nation to go down and take a look at Savannah River. It is very difficult for me to know when I am presented with certain information whether it is really factual, what I call ground truth. That is, I do not know if it is really true.

And I think sometimes the reports coming into the Department have not reflected the reality out there in the field. So I am very leery right now to do anything but say that your questions probably are the same kinds of questions I am asking this Advisory Committee, to tell me what is really in the database. And if we have had any of these infractions or violations, then we need to know that and air it all.

So I have the same questions you do, and I think to the extent we can I would like to answer those in greater detail, and I think we can do that within about a months' time. It is going to take us some time to really know how to answer that question. I think we have probably got some serious problems understanding our database, and that is going to be aired with the Special Advisory Board and the National Academy looking into the technical aspects of it.

So we are trying to take this particular element of cancer in the Department and deal with it and I think that we will just have to wait a few months, Senator, to get the kinds of answers that you really will feel comfortable with and I will feel comfortable with.

Senator KOHL. Thank you sir.

Chairman GLENN. Just one further comment.

Dr. Goldsmith, a report was put out back some years ago that you were the Chairman of, this report was on a radiation epidemiological contractors workshop that you had at that time. And it indicates at that time that plutonium in autopsy tissues from persons in the general U.S. population were part of that study. As I understood you, earlier, you said that that was not the case.

This indicates that that was part of that study you were reporting on at that time, as well as that from exposed workers. Now, we may have some follow-up questions on that because we are concerned about that.

Dr. GOLDSMITH. I would be glad to do that and advise you.

Chairman GLENN. Are those studies going on now?

Dr. GOLDSMITH. As far as I know, only workers studies are going on, as I say. I will check into this and provide the answer for the record.

Chairman GLENN. And these are done only with the permission of relatives or with the deceased's advance permission?

Dr. GOLDSMITH. It is my understanding that it is only with the deceased's advance permission.

Chairman GLENN. How about general population, are these body parts and so on being analyzed? Do the relatives know about this?

Dr. GOLDSMITH. Again, I have to check that out. I am not sure.

Chairman GLENN. We would like to have that for the record, if we could.

[The information submitted follows:]

The report that mentions autopsy tissues from persons in the general United States population was based on tissues sent to Los Alamos by various pathologists around the country. This program was essentially stopped in 1978. Some tissues have been kept in a frozen state but currently are not being analyzed. In most cases only general autopsy permission would have been obtained, without specifying this particular study. At present, only workers' studies are being conducted.

Chairman GLENN. Secretary Watkins, thank you for being here this morning. We will stand in temporary recess while we run vote and get back. Thank you very much.

[Brief recess.]

Chairman GLENN. The hearing will resume.

We have the second panel this morning, and the second panel, if they will take their seats at the table please, are Margaret Seminario, Director of Occupational Safety and Health for the ALF–CIO, Bob Wages, Vice President, Oil, Chemical and Atomic Workers, Mike Davidson, President, Local 8031, United Steel Workers of America at Rocky Flats, Colorado, David Day, President of Atomic Trade and Labor Council, Department of Energy, Fernald Ohio plant, Jesse Abney, Local 501, International Chemical Workers Union at Fernald.

We welcome all of you this morning and look forward to your testimony.

Ms. Seminario, if you would lead off we would appreciate it.

TESTIMONY OF MARGARET SEMINARIO, ASSOCIATE DIRECTOR, DEPARTMENT OF OCCUPATIONAL SAFETY, HEALTH AND SOCIAL SECURITY, AFL-CIO [1]

Ms. SEMINARIO. Thank you very much, Mr. Chairman.

The AFL-CIO appreciates the opportunity to testify at these hearings on worker safety and health at DOE nuclear facilities. AFL-CIO unions represent most of the workers employed at these facilities and the AFL-CIO has a long history of involvement in safety and health at DOE facilities.

As this Committee is well aware, conditions at many DOE nuclear facilities pose a serious threat to safety, health and the environment. Over the past four decades radioactive releases and improper dumping of hazardous and radioactive wastes have exposed workers and the public to serious risks and have contaminated the environment.

For workers these problems have been compounded by antiquated facilities, poor engineering controls, inadequate protective equipment, lack of training, and poor monitoring and surveillance.

Secrecy, lack of accountability and commitment and decentralized management are all major factors which have led to the current crisis. Operation at DOE facilities have been shrouded in secrecy and the "production first" mentality established during World War II has continued with safety and environmental concerns given secondary attention.

For workers at DOE facilities, the safety and health problems are serious and extensive. Over 100,000 workers are currently employed in the DOE nuclear weapons complex, and it is estimated that nearly 500,000 workers have been employed to do this work over the past 30 years.

As you pointed out earlier, it is not just exposure to radioactive releases which pose problems, but problems like asbestos, exposure to beryllium, other toxic chemicals and safety hazards are major problems for workers employed in these facilities.

And when the occupational safety and health act was——

Chairman GLENN. Incidentally, on that subject, I was much encouraged by what the Secretary said. I was aware he had given a letter to Secretary Dole on OSHA involvement and I think that is a good move forward.

Ms. SEMINARIO. I would agree, but when OSHA was established back in 1970 the DOE nuclear facilities were specifically exempted from its scope. DOE does adopt the OSHA standards incorporated into their own rules and the contractors are supposed to follow them. But, indeed, that has not been the case. And just as DOE has failed to enforce safety and health standards, the Department has also failed to conduct the necessary research to evaluate potential adverse health effects among its worker population.

DOE has, as we have heard this morning, extensive data and records on these workers which have not been readily available to researchers to evaluate. Nor has DOE, itself, made systematic attempts to follow up and notify workers who have been exposed to radiation, other hazardous substances, and provide them the opportunity for medical surveillance.

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[1] See p. 93 for Ms. Seminario's prepared statement.

Last year I believe DOE did announce that for beryllium exposed workers that the Department was going to be establishing a high risk identification, notification, and surveillance program, but it is unclear that any real progress had been made to implement that notification program for beryllium exposed workers.

DOE does have plans to engage in cleanup, shutdown and modernization at a number of its facilities, and this will indeed create additional safety and health problems for workers. As we have seen in the EPA Superfund sites, those environments are hazardous, the workers going into those environments are exposed to significant safety hazards and to toxic chemicals. And in the DOE facilities, workers will face the same risk and we will need to address those in the future.

There are also problems related to potential plant shutdowns. If these occur—and we do not necessarily think that they need to—they will cause tremendous worker dislocation and leave DOE workers without access to medical care that they will need, or employment opportunities.

High risk workers, those who have been exposed to radiation and other toxic chemicals, may find it particularly difficult to find employment because they, in fact, have been blacklisted because they worked at DOE facilities and employers know that they may be at high risk from exposure, and so it puts them in a very difficult situation.

So we think that immediate and far-reaching action is needed by the Congress to address these very real problems. With respect to worker safety and health, we believe that responsibility in this area should be transferred to the Occupational Safety and Health Administration.

As you indicated, we heard from the Secretary that they have made an overture to the Secretary of Labor to offer assistance, but it appears that DOE has asked for just that, assistance. And a transfer to OSHA is not the same thing as DOE asking OSHA to come in on DOE's terms. OSHA may provide guidance in that regard, but OSHA is not a consulting firm. It is a regulatory and enforcement agency, it is a piece of legislation which gives workers specific rights.

And we think that workers at DOE facilities have to be guaranteed the same rights of protection, the same rights of access to information, that all other workers enjoy, and this can really only be accomplished through a legislative change where worker safety and health is transferred to OSHA and OSHA does not just come in at DOE's request on a consulting basis.

Similarly, we think that health and safety research should be removed from DOE's jurisdiction. Again, it is different to have DOE essentially responsible with independent oversight. It is a very different matter to transfer that research to an independent body who may work in conjunction with DOE on studies, but we think that transfer is definitely necessary to put research responsibilities in the hands of an independent body that indeed has no conflict of interest. But legislation is also needed to provide access to DOE facilities and agency and contractor records, as well as worker involvement and participation in the design and conduct of these studies.

Those are problems or issues that will change the situation, hopefully, in the future, but as I indicated, there are thousands of DOE workers who have been exposed over the last four decades who may be at serious risk of occupational disease as a result of radiation exposure and other toxic substance exposures, and we really have to address the problems of these workers. We have to mandate an established notification and surveillance program for workers so that there can be early detection of disease. And the fact that DOE has announced that it may close several facilities does, in fact, increase the urgency of setting up such a program before contact with those workers is lost.

We must also look to establishing a Federal compensation system for DOE workers who develop occupational diseases due to workplace exposures. Currently, DOE workers are covered under state compensation systems. State workers' compensation programs are notoriously bad for providing adequate coverage of occupational diseases and, indeed, if these workers are developing cancer and other diseases, as we think they are, they deserve compensation due to these occupational diseases.

DOE has announced plans to compensate members of the public who have suffered adverse health effects because of contamination from DOE facilities, and we think that workers are at greater risk of disease because of DOE's neglect and deserve similar compensation.

Now, we know that the cost of cleaning up DOE facilities, improving safety and health, would be significant. The estimates have ranged from $53 billion to $200 billion, but in looking at the reports, which are the basis for these estimates, they do not include the full range of worker safety and health protections that they are talking about. They do not include programs for notification and surveillance. They do not include programs for workers' compensation. And similarly, DOE's recently announced 5-Year Plan does not appear to address these important worker safety and health concerns.

We are hopeful that with the continued vigilance of this Committee that there will, in fact, be Congressional action and action by DOE to provide workers at DOE facilities the protection they need and deserve.

Thank you very much.

Chairman GLENN. Thank you very much. Mr. Bob Wages, Vice President, Oil, Chemical and Atomic Workers.

TESTIMONY OF ROBERT E. WAGES, VICE PRESIDENT, OIL, CHEMICAL AND ATOMIC WORKERS [1]

Mr. WAGES. Thank you, Mr. Chairman. On behalf of the several thousand atomic energy workers that my union represents, we appreciate the opportunity to be here. And I want to add to my prepared remarks and embellish upon them just a little bit, because it is important to understand the backdrop against which workers' comment is given. That backdrop is one of being told by contractors and the Department of Energy to keep quiet, to shut up, if you make too much noise or rattle too many cages your job is in jeopardy. And hence, often times through the years workers have sat silent against what they fear is a loss of their jobs.

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[1] See p. 99 for Mr. Wages' prepared statement.

You are going to hear from people from Fernald and Rocky Flats, a chemical worker who was poisoned by plutonium from working at the Fernald facility. Collectively, all of us here today represent over 10,000 folks who work in this industry, specifically discussing occupational safety and health.

I want to pose a question, because the question is important to what work this Committee does and what results we are ultimately going to see. And that question is, when did we collectively know what was going on and what did we collectively know? And how long has it been hidden?

It is also fair to say that the workers in this industry—and I can only speak for those I represent—are angry. They are angry at a history of the Department of Energy's self-regulation, its denial, its coverup, its betrayal to the workers and its betrayal to the communities in which these facilities operate.

But let's not make any mistake about it, and I want to point out to the Committee today, matters of urgency have been brought to the attention of the United States Congress on prior occasions with little meaningful response. Only when DOE's ugly record of environmental and public health failure became a public issue and a public health issue have we ever really had an opportunity as workers to stand up and say, it is true, we need help, we have to take action.

We are going to make certain observations here today and, hopefully, it is those observations which will help us carry out the debate that needs to take place. We are participating here today to focus attention on the absolute necessity of implementing eventually legislative reform in regards to environmental and occupational safety and health oversight. We also expect this Committee and the Congress as a whole to understand the needs and the expectations of thousands of atomic energy workers who have been participants in and victims of the military imperative of the Cold War and are now wondering what is going to happen next.

A simple message we have to give you is they have to be protected and they have to be treated as part of the military establishment that helped to create the nuclear facility problem that we have.

But a bit of history, I think is in order. In 1970, in July, the Oil, Chemical and Atomic Workers International Union at a conference in Salt Lake City, Utah, invited the atomic energy workers from Rocky Flats, and we had a number of atomic energy workers from our own union at this conference. I want to read you what one of the local officers said at the time in 1970: "We have a problem with disposing of our radioactive waste. This has been an extremely difficult problem for the Government, but they have gone about it in a real haphazard way. We have one of the burial grounds in the Idaho Falls National Reactor Testing Station. The way that they dispose of the radioactive waste is they take heavy equipment and they go out and they dig a big trench. They put the smaller particles in pasteboard boxes and the rest of the stuff is dumped directly into the ground. As you know, the Idaho Falls disposal burial ground is right over the Nation's largest underground water supply which handles water for the vast Northwest. We know that we have tanks of radioactive material, liquid, that is leaking into the ground. Hanford has the same problem and the same problem exists in other places. Legislation or some type of respective action is going to have to take place to protect people, the people's environment."

That local union official is here today and he is OCAW's Legislative Director here in Washington.

This book was printed by our union many years ago, and we dusted it off recently. We forgot what it said, but in it there are references time and time again to a series of correspondence reflected in the March 6, 1970 Congressional Record, correspondence between Senator Frank Church, the Atomic Energy Commission, and others posing the questions that this Committee struggles with today, that the distinguished Secretary of Energy is struggling with and has asked for more time to struggle with.

I submit to you that there are a lot of honorable men who have been Secretary of Energy. I do not think at all that Admiral Watkins is a dishonorable man. The problem is not the person who is the Secretary of Energy. The problem is an agency that has absolutely run amuck and seems to me, seems to the workers who have to deal with it, to be out of control.

Can he control it? I honestly do not know. I think he is making an honest effort to try some things, but the absolute urgency of Congressional action cannot escape anyone's attention.

The questions raised 19 years ago include—and if you go back to the Congressional record and look at it, it is a recitation of what we are dealing with again today—radioactive contamination of ground water, plutonium contamination in off-site areas after the fire in 1969 at Rocky Flats, long-range dangers of radioactive waste storage, a discussion on waste disposal practices at the Idaho National Reactor Testing Station, the allegations of suppression of information, specifically the National Academy of Sciences report to the Atomic Energy Commission on the geological aspects of radioactive waste disposal, calls by the Bureau of Radiological Health for certain reforms to be made of handling solid radioactive waste at the National Reactor Testing Station.

All of those things are documented in the Congressional Record 20 years ago, and we continue to talk about them today. And when I hear a responsible official of the United States Government say, give me more time, I am not impressed, I am not moved. The workers who are out there at these facilities are entitled to some remedial action and they are entitled to it quickly.

But the questions of 19 years ago, while so many of them remain the same, there is also the notion that many of the questions raised on a more contemporary basis are getting the same hearing from the Department of Energy that we got 20 years ago. Our facilities, many of them are literally built out of asbestos. Long after the lethal qualities of that substance are known we still wait for remediation projects on the sites. Lethal hydrogen fluoride gas is used at several facilities without any discussion on the safe transportation, storage, and use and process of this toxic substance which, at least in the petroleum industry, is addressed on a continuing basis.

The use of beryllium in the atomic energy industry has created a condition called berylliosis, which we have struggled long and hard with the Department of Energy to discuss how we are going to track these workers and protect these workers. One of our local union leaders from Idaho Falls, lamenting DOE's constant propaganda that all is well, offered an observation to me not long ago. He said, "I keep preaching ALARA, the policy to keep radiation exposures As Low As Reasonably Achievable, but some guys think the 5 rem standard is a bank account to be filled. How can I motivate people when DOE keeps telling them that crossing the street is more dangerous than the radiation?"

This is particularly troublesome when there are moves afoot to increase allowable exposure to over 5 rem, and should that effort succeed, I can guarantee you workers will be in the street.

DOE will talk about its self-imposed occupational health standards and that they are more stringent in some respects than OSHA general industry standards. Talk is cheap. Paper does not mean a thing. The DOE and the contractors consistently and systematically deny workers and their representatives rights that people in the private sector have.

Accidents are investigated by DOE and the contractor with little or no worker representative involved at all. At another facility, a contractor that is no longer a contractor—and maybe that is good—the Goodyear Atomic Corporation of Portsmouth, Ohio—I personally was involved in a fight for 5 years on an argument about whether or not that contractor had to give the union certain safety and health information that we thought we were entitled to as a matter of law. It was a fundamental principle that the National Labor Relations Board had already established for the private sector and we had to drag that company kicking and screaming to get basic health and safety information. And who paid for the defense that that company raised and DOE participated in? The taxpayers.

OCAW, along with other concerned trade unions, has committed itself to an agenda of reform. Hopefully, we make that clear by our appearance here today. We are deeply and profoundly concerned about the health, safety and future of workers that we represent, in fact, at all of the atomic energy facilities. But we are equally and also concerned about the health and the welfare and the protection of the communities in which these facilities operate, because our people live in these communities, the workers live there, but if we are going to deal with the issues of worker safety and health, environmental safety and health, and all of the attendant public health issues, then we are going to have to do it in a way that is in the public eye, in the light of day, and away from the secrecy that has shrouded this provision for the last 40 years.

The workers I represent are not anything less than military veterans. They deserve to be treated by their Government as participants in the military commitment to the development of atomic energy. We cannot and we are not going to try to reshape the moral decision that led us to build or drop the bomb. We do expect to participate in shaping regulatory reform that will serve the workers and the communities first and the appetite of the military and the Government second. We are committed to the process, we deeply want to work with this Committee in making this process work effectively. We expect nothing more and, frankly, we will settle for nothing less.

Thank you for your attention, and on behalf of all the people I represent, thank you for your thoughtfulness on these issues.

Chairman GLENN. Thank you, Mr. Wages. Our next witness is Mr. Mike Davidson, President, Local 8031, United Steel Workers at Rocky Flats, Colorado.

TESTIMONY OF MICHAEL T. DAVIDSON, PRESIDENT, LOCAL 8031, UNITED STEEL WORKERS OF AMERICA, DOE ROCKY FLATS, COLORADO PLANT [1]

Mr. DAVIDSON. Thank you, Mr. Chairman. My name is Mike Davidson and I am president of United Steel Workers of America, Local 8031. Our local represents one half of the employees at the DOE Rocky Flats facility. Our 2,600 members are involved in production and maintenance at the plant.

Mr. Chairman, I want to take this opportunity to thank you for the privilege of addressing your Committee and express my appreciation for the leadership and concern you have personally shown in regards to ensuring the protection of workers at the DOE nuclear weapons facilities and for your support of total independent oversight at facilities such as Rocky Flats.

As with any industrial complex, you are going to experience the necessity of working with hazardous materials, the obvious unique aspect of our facility is the additional hazard of radioactive substances.

We are continuously attempting to reduce our exposures in the workplace through cooperative efforts with the contractor. The major problem we have encountered is a reluctance by the DOE and its contractor to issue a timely action on correcting deficiencies. The beryllium [BE] issue is a case in point where the contractor and the DOE knew for sometime of the concerns of our union relating to our members' exposure to BE, but were reluctant to implement effective controls to protect our members. The DOE's own OSHA-type audits repeatedly noted this as an issue, and yet, no enforcement or corrective action took place by the DOE.

The biggest road block seemed to be the required additional cost of these safety enhancements such as a new ventilation system, totally enclosed gloveboxes, and procedural changes in fabrication. Ultimately, the DOE and the contractor agreed to allow the National Institute of Occupational Safety and Health, or NIOSH, to intercede and subsequently some protective measures were taken, such as cleanup of the BE contamination in the workplace and the issuance of full-time respiratory protection.

An added benefit resulted with the National Institutes of Health giving a $1.5 million grant to the National Jewish Center for Immunology and Respiratory Medicine in Denver, Colorado. The grant is allowing development of a validated screening test for beryllium disease. The new test has already determined that 14 of our brothers and sisters do, in fact, have the disease of berylliosis. The test has therefore been invaluable in identifying persons to be removed from further BE exposure and those employees who, with medical treatment, may lower the risk of subsequent impairment from this chronic disease.

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[1] See p. 103 for Mr. Davidson's prepared statement.

The continuing downside of the ongoing BE issue at our plant is that the DOE and the contractor have refused to implement any further corrective action in the workplace and continues to resist admittance of liability in most workers' compensation cases. There has been little or no recent action on the DOE's proposal to implement a beryllium notification program. The unions at the DOE plants where BE work is performed should be kept fully informed as to the progress of this notification program. The goal of the program would be to notify dislocated workers who have, subsequent to exposure to BE, left the employ of the nuclear weapons facilities and are not being tracked for the possibility of berylliosis.

I believe this should be given a higher priority and the unions at the affected facilities should be actively involved in any implementation of this program. The reality is upon notification most members will turn to their union first for information and assistance.

I believe the BE issue at our plant is indicative of the absolute need for independent oversight of the DOE and its contractors to ensure that health, safety and environment are always given first priority over production.

It is one thing to recognize a health and safety problem, which we are usually able to do. The ongoing problem is that there is no one mandated in the Federal Government to force the DOE and its contractors at these nuclear weapons facilities to comply with the corrective action and ultimately have enforcement penalty if they do not.

There is also a definite need for additional hazardous material training at our site. The area of non-radioactive hazardous material handling and control needs to be given a higher priority and competent instructors should be utilized. We are not currently receiving the OSHA mandated 24 hours of training at our plant. This training should involve specific classroom time with ongoing retraining at periodic intervals.

There is also a very clear need for additional funding for cleanup and protective equipment at our plant, such as a new selective Alpha Air Monitoring System, a dedicated Neutron Criticality Detection System, state-of-the-art fire alarm system that meets current fire code standards and, of course, adequate funds for expeditious cleanup of the burial sites used at the plant, which are over 20 years old.

If I were to sum up what I believe would be the single biggest change which should be implemented at the DOE nuclear weapons facilities to ensure health and safety of both workers and the public, it would be total independent oversight. The cliches have almost become a household word, the fox watching the hen house, and the toothless watchdog, to name a few.

If ever the time were right for getting this proposed legislation passed, it is now. No matter how ardently the DOE or its contractors of the nuclear weapons complex attempt to cleanup their act in the areas of health and safety, their credibility is forever going to be challenged. The recent Department of Justice investigation at the Rocky Flats plant has once again inflamed the fears of the public and attracted the calls from some for the demise of the plant.

There are many justified arguments for the mandating of independent oversight, such as improved safety and health, the enforcement of safety first, protection of workers, safeguarding of environment and higher priorities for adequate funding for health and safety, to name a few. The most recent reason is the one that may hold the most weight so far. These facilities have lost the confidence of the very people we are working to protect by our contribution to the nuclear arms deterrent of our national defense, and that is the public of our country. The public perception, right or wrong, is that the DOE and its contractors no longer have their best interests in mind and feel they are being betrayed. The checks and balances required in our representative form of Government are clearly lacking when it comes to the DOE doing their own oversight.

Whether it is OSHA and NIOSH, or a new, independent agency of the Federal Government which is given the independent oversight authority, it can no longer be left up to the DOE. The question should no longer be whether or not we need independent oversight, it should be, how can we get it legislated in the most expedient way.

Thank you.

Chairman GLENN. Thank you, Mr. Davidson. Next, Mr. David Day, President, Atomic Trade and Labor Council, DOE, Fernald, Ohio plant.

I would say, Mr. Day, that I think some of the attention focused on Fernald was key in really opening up to public scrutiny what had been going on in the whole weapons complex. It goes back a number of years there. You participated in that, as did Mr. Abney and others there in Ohio.

We had some of our very first hearings, field hearings, out there in that area that focused some attention on this, so we look forward to your testimony and we are glad you are here today.

TESTIMONY OF DAVID DAY, PRESIDENT, ATOMIC TRADE AND LABOR COUNCIL, DOE FERNALD, OHIO PLANT [1]

Mr. DAY. Thank you, Senator.

Mr. Chairman and members of the Committee, thank you for giving me this opportunity to speak here today. My name is David Day and I am President of the Fernald Atomic Trades and Labor Council, a council made up of 13 individual local unions working at the Westinghouse Materials Company of Ohio.

The council is affiliated with the metal trades and the ALF-CIO. I belong to the Machinists Union and have worked at Fernald for 10 years. The DOE has operated the facility for approximately 38 years. During Representative Gaydos' hearings, I spoke on the secrecy that surrounds the DOE facility. I would like to add that testimony for the record today.[1]

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[1] See p. 112 for Mr. Day's prepared statement.

Chairman GLENN. Without objection it will be included in the record.

Mr. DAY. In preparing for today's testimony, I talked to many workers that have been employed at Fernald for many years. All the workers have nightmarish recollections of their years at Fernald. In my testimony I will share one of their stories. I want to tell you about Floyd Grubbs. He started working at Fernald in 1955 as a laborer in transportation and belonged to the Teamsters Union. As a laborer, Floyd unloaded South African ore from boxcars that was later dumped in K-65 pits. He helped dump 600,000 pounds of uranium ingots in Pit 1 at the K-65 silos using a flatbed truck.

Floyd was not told by his supervisor that these actions could be dangerous to his health. He was never fitted for a respirator. In fact, he was told there were—he was not told where there were any respirators available. He was never asked to attend a health and safety training session on any of the various materials that he worked with.

When Floyd was upgraded to forklift operator, he worked in many buildings and areas of the project. In Plant 5 he was exposed to magnesium fluoride, greensalt and black oxide dust. In Plants 2 and 3 Floyd was exposed to acid boilovers that cause mist and fumes. Yellow cake from Plant 8 was put in a dump truck. Yellow cake is an oxide form of uranium.

Samples were taken from a bucket called "good samples." These were usually put aside. They were known by the operators as the place to go get a good sample. It wasn't necessarily from the material that you were actually supposed to be sampling. This material was then dumped in Pit 3 at the K-65 area. Every truckload was improperly sampled. Floyd helped load thorium that was stored in various buildings on the project.

Magnesium fluoride was dumped in Pit 6 of the K-65 area using an old dump truck. The floorboard was full of holes, causing the magnesium fluoride dust to fill up the cab of the truck. There were many chip fires there in Plant 6, exposing the workers to the smoke.

Today Floyd Grubbs is the only living transportation laborer that started employment in 1955. The cloak of secrecy has been our biggest enemy at Fernald, secrecy that has promoted ignorance and management practices that defy common sense and the law. The inability of the workers to call on outside safety and health experts added to their unsafe practices.

For instance, workers would walk around eating an apple or reach into a tobacco pouch with black oxide on their hands. Ten years ago as a new employee, I was told that the materials that I was working with at Fernald had such a low level of radiation that the biggest problem was that it was like working with lead, there was no indication of the hazards of radiation. In fact, we were told the levels were too low to harm us. We were not told we were working around materials like thorium and plutonium.

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[1] Not received by publication time.

In entering the plant site, the work areas were so dirty that we never thought there was anything to be concerned about. DOE was not enforcing their own safety and health standards on the contractors due to this cloak of secrecy. In 1985 Westinghouse came to Fernald, replacing NLO. NLO's legacy had been well published due to the class action suit brought by the community. The cloak of secrecy for the most part has disappeared and been replaced by the threat of unemployment. Morale and employment are being held for ransom. On a daily basis employees are reminded that bad press will close the doors of the FNPC forever.

Think of the Catch 22 workers find themselves in every day. In the past, people would not speak out because they were afraid or they did not know any better. They did not know what was out there to harm them. They were not told of the problems. Now that they are aware of the problems in the plant, they are being told that if they talk about these problems, that the doors will shut, the plant will close down and they will lose their employment. And we have got so many examples out there of people who are out of work now due to illness, many cancers, and these people have no remedy. They have no medical benefits, they are just out of luck.

Since 1985 when the cloak of secrecy was lifted, the workers have gained much knowledge and awareness. Now we want to use that knowledge to continue our employment, but hundreds of workers have recently been laid off.

Two unions have been completely eliminated due to these layoffs. The new work force that is being brought in does not have a level of awareness that the current workers do.

Every time we talk about cleaning up the facility, we need to ask what is going to be done about the workers like Floyd who are dying? What is going to be done for the workers today who not only face work hazards and unemployment that cannot get health insurance? Who will ensure these people? Who will employ these laid off Fernald workers? And is it true that employees are being laid off due to the budget deficits caused by paying the lawyers' fees and fighting the community lawsuits to defend NLO?

I talked to a representative of Westinghouse just this week, Monday, and he told me that the reason that people were being laid off—we have a layoff that is taking effect this week—he told me that the reason the layoff was taking effect was because it was so expensive to fight the lawsuits from the community and that the lawyers that they were paying for to defend NLO was taking the capital budget away that would employ these workers. That seems to be very ridiculous, but I don't know.

As the President of FATLC, I am here to let the workers' needs be known. The workers at Fernald need four things. First, we need oversight by someone other than the DOE and the contractor; second, medical surveillance of all the workers who have been at the Fernald plant. Epidemiology alone will not protect the work force. There must be studies of the health effects connected to Fernald.

Third, the workers need guaranteed health benefits. Fernald workers who are laid off and sought new employment are being told they are too big of a risk to be covered by new employers health benefits. The workers who are still at Fernald can no longer afford our insurance. Costs have risen 80 percent the past year. Fourth, workers need job protection. Our biggest fear is that if the current work force is not at Fernald, the community will also suffer.

Appropriate, safe and efficient cleanup will also be affected. All future cleanup efforts must involve the knowledge and expertise of the current experienced work force.

Let me wrap up this presentation by stating how pleased we are that we can address questions to the Admiral. It is already apparent that the new DOE administration has taken a more pro-active position on health and safety issues of the workers at the DOE nuclear facility, but we are still very leery of what is going on with DOE.

Chairman GLENN. Thank you, Mr. Day. We are on another vote. Senator Kohl will run over and vote and come back and we will try and make this in time so that we do not have to have a recess of the Committee here.

Our last witness for this panel, Jesse Abney, Local 501, International Chemical Workers Union at Fernald, also.

Mr. Abney.

TESTIMONY OF JESSE ABNEY, LOCAL 501, INTERNATIONAL CHEMICAL WORKERS UNION, FERNALD, OH [1]

Mr. ABNEY. Thank you, Senator Glenn, and members of the Committee. My name is Jesse Abney, and I deeply thank you for allowing me to appear before this Committee today.

As a member of the International Chemical Workers Union, I have worked as a chemical operator for 8 years in Cincinnati, Ohio. See attachment one for a copy of my biographical sketch.

Much of what I will relate to you today may shock you, but that is not my primary purpose. I come before you today to urge you to support the passage of Federal legislation that would bring the DOE under the jurisdiction of Federal OSHA and NIOSH. Legislation is needed that will transfer all DOE occupational health research and experimental studies to the Department of Health and Human Services. Further, legislation is needed that will provide nuclear workers with comprehensive medical care, health benefits, and income protections they rightfully deserve.

Several years ago my wife and I saw the movie, Silkwood. How could I have ever imagined that some 2½ years later I would be telling a U.S. Senate Committee that just as Karen Silkwood, I was tested positive to a company administered medical test for plutonium in my body.

In addition, the medical staff at the Westinghouse facility has recently informed me that I have a high body burden of uranium, U-235 in my lungs. How this is currently affecting or may affect my health in the future, I do not know with certainty. What I do know is that there is no known threshold radiation dose that is safe. Exposure to radiation, no matter how little, carries some risk. Radiation causes many different kinds of cancer and best of my knowledge defects.

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[1] See p. 118 for Mr. Abney's prepared statement.

I first served my country as an Airman First Class in the U.S. Air Force, 2 years in Georgia and 2 years overseas in Germany. Yet today as an employee at Fernald, I feel that I am just as much a Government servant as when I served in the Air Force, only now my Government does not recognize me. When I first went to work at Fernald, I was told that even taking an ashtray was a Federal offense. Since the Fernald plant was a Government facility, it seems ironic that materialistic items received full Government protection but the safety of nuclear workers does not.

I do my job well. My safety record is clear. I am not careless. I believe in the safety precautions and follow them. I have a great deal of respect for the dangers with which I work. Despite my precautions, I am contaminated. As stated, I have medically tested positive for plutonium contamination and now I have a high body burden of uranium U-235 in my lungs.

Is there some humor in the fact that I do not even smoke? Now what do I do? The talk is the plant will be closed. Am I supposed to be elated? Will I be able to find another job and still support my family? Would another company be willing to cover me under their health insurance plan, knowing that I am a nuclear worker? How would I pay my monthly bills? Does this seem like an endless list of questions?

This is what workers at the Fernald plant are left with now, questions that have not been answered or have been answered unsatisfactorily.

These questions accompany us to work everyday, and if a worker becomes contaminated, these questions become an even stronger workmate. Yet the answers provided by the DOE and Westinghouse become even weaker.

This year our company health insurance at Westinghouse was actually weakened instead of strengthened. This is progress?

We are tired of being patted on the back and sent on our way. We are tired of platitudes, we are tired of being the ping pong balls batted between press, politicians and plant operators. We are tired of being ignored by our Government.

I have been asked to give a brief rundown of my history of radiation contamination, as well as that of my fellow workers. On April 21, 1987 I was notified by my supervisor, R. Dicken, to report with union representation, to S. Hennifeld, Director of Health-Physics at Westinghouse.

Mr. Hennifeld told me that I had an unacceptably high amount of plutonium in my system. I was then removed from my regular work responsibilities and placed in the men's locker room as a cleanup person. Weekly specimens of urine were submitted for about 4 weeks. After weeks of waiting, I was informed that my urinalysis showed acceptable levels of plutonium. I was then allowed to return to production.

In November of 1988, I was sent to Hanford, Washington, for an in vivo body count to be retested. I was told the facilities there had the best equipment in the world. I was informed that my tests showed acceptable levels of plutonium.

I do not know what "acceptable levels of plutonium" means as defined by the company. How can I have acceptable levels of plutonium in my body when a large sector of the scientific community believes that there is no safe level of exposure to this plutonium? Furthermore, the radiation standards we have today were set in the 1950s. The present limit of 5 rems per year is not a safe worker exposure level.

The International Chemical Workers Union supports the position that exposure limits be lowered to .5 rems per year with a lifetime accumulation of 17.5 rems per year. The current limit is 10 times too high. Many prominent scientists today are calling for the tenfold reduction in the maximum allowable exposures to nuclear workers.

Also, I should add that allowable limits of exposure to radiation have changed dramatically in this century as scientists find out more about the harmful effects.

In 1920 the exposure limit was 100 rems per year. In 1934 the limit was lowered to 30 rems per year. And in 1948 the limit was lowered again to 15 rems per year. Then in 1958 the limit was lowered again to the present exposure limit of 5 rems per year.

To date, Westinghouse officials have not provided me with a detailed written explanation in layperson language of what my exposure to plutonium means in terms of the short and long term health effects. I have only been provided with the raw data.

In March 1989 I was informed by plant management that I have been contaminated by radiation a second time based on a routine body count that had been given to me at the Westinghouse plant in Cincinnati. This time I was told there was an unacceptable level of uranium U-235 in my lungs. Subsequently, I have been directed by the company to regularly submit specimens.

Today, as I speak, I still have a high lung burden of uranium U-235. The last time I was in the in vivo body count department, the director of the in vivo counting department said to me that he wished he could change the data that he had, that it was much too high, it was unacceptable to him.

I do not know how the exposure occurred. I have been advised by Westinghouse officials that there is continuing reason for concern and that they will continue to monitor my health status. It is important to note that Westinghouse never provided me with a material safety data sheet for the agents that I could be exposed to in my work area. I did receive periodic safety and health training at the plant, but this training was typically more generic in nature, rather than tailored to the specific exposures that I as an individual worker might suffer in my work area.

Currently I am working closely with my union and they have an independent clinic reviewing my overall medical and radiation exposure records.

For the Committee's information, in reviewing——

Chairman GLENN. Mr. Abney, I am going to have to interrupt because I just have a very limited time to get to the floor and vote. Senator Kohl will be coming back. He is going to continue with the rest of your testimony. I will be back as fast as I can.

I want to speak to particularly you and Mr. Day just previously about what the situation is there at Fernald. We have some things that have been occurring on the floor as late as last night in the middle of the night that affect some of the things that you talked about here, so I will get back just as fast as I possibly can.

We will have to stand in recess temporarily.

[Brief recess.]

Senator KOHL. [presiding.] The hearing will continue.

Mr. Abney, I understand you are continuing with your statement.

Mr. ABNEY. Yes, sir.

Senator KOHL. Go ahead.

Mr. ABNEY. Currently I am working closely with my union and they have an independent clinic reviewing my overall medical and radiation exposure records. For the Committee's information and review, I am providing the Committee with a copy of my occupational radiation exposure history. I wish to inform the Committee that there were three additional incidents at the Fernald plant that I am aware of involving workers and plutonium. Because we are limited in time, I will report on one of the three. Descriptions of the other two incidents can be found in my written statement.

It is with deep regret that I report to the Committee that Robert J. Casey, a chemical operator, 31 years of age, was contaminated with plutonium in mid-year 1986. Tragically, Casey was laid off by Westinghouse in December of 1988 and most likely will never be called back to work at Fernald. His unemployment benefits and medical benefits have run out and he has not been able to find a comparable job. He is currently working part-time as a roofer and earns approximately $13,000 per year as compared to the $27,000 annual salary he drew at the Westinghouse plant.

Casey was informed by Westinghouse in April 1987 that his urinary plutonium level from a sample submitted in September, 1986, returned elevated. Westinghouse claimed that the results of his specimen showed a plutonium result which was only slightly above the detection limits for plutonium in the procedure. But a subsequent urine study conducted independently at the University of Waterloo, Ontario, Canada, showed Casey to have plutonium levels that were approximately tenfold higher than the single level detected by Westinghouse. The elevated value was found more than one year after the first abnormal value found by Westinghouse.

According to Casey, he was unaware that he was working with out-of-spec plutonium at the time of his exposure. Casey has filed numerous complaints with Westinghouse and the DOE headquarters office in Oak Ridge, Tennessee, demanding that Westinghouse pay the cost for an ongoing medical evaluation and medical bills which have piled up since he was laid off from the plant.

Since his layoff, he has been forced to sell off many of his personal assets to make ends meet. Please be aware that I am providing the Committee with one set of records related to Mr. Casey's plutonium contamination at the plant. Included is a list of additional workers who have been exposed to plutonium and have been laid off, transferred to another plant, terminated or have left the plant for other employment.

In closing, I believe that DOE worker protection programs, those of their contractors and subcontractors, are grossly inadequate. The time for major change in these critical areas is long overdue. Bold and progressive legislative and regulatory actions must be immediately taken to fully protect the nuclear workers and their families.

I wish to inform the Committee that on page 10 to 13, the International Chemical Workers Union offers a total of 14 recommendations for improving the health and the safety at nuclear workers' facilities.

I believe that Fernald can continue to stay open, but the workers have to be involved and provided with the truth and treated like thinking humans. They have to know the dangers of the job and know that others recognize those dangers. We have to know that if an accident happens or the unexplained contamination, or the health complications such as cancer, that our welfare will be of the first importance.

Finally, I believe it is of great importance that the wives and the family of the nuclear workers be given the opportunity to speak out on this issue at Congressional hearings such as are being conducted today. I am proud to say that my wife, Sally Abney, is here with me today. In this vein, I have included a 3-page statement written by my wife as an attachment to my written testimony.

I thank the Committee deeply for allowing me to testify before you today. Thank you very much, Senator Glenn.

Chairman GLENN. Fine, thank you. And I also want to thank Senator Kohl for going ahead and going over early and getting back here.

Let me address just a couple of the issues there at Fernald before we go on to other questions, because you indicated there was some doubt about what the plan is there at Fernald.

Fernald, of course, has been marked to be closed down over a phaseout period over a period of time because the ingots that start out there in the plutonium production cycle are no longer needed as they once were.

You also are working on depleted uranium matters there. That is something that is continuing, but the need for that also is phasing down. What we asked DOE to do, and what they are doing—was a study on other uses for the plant there.

Meanwhile, employment has gone down, as you are aware, and what it is down to is probably close—not too far off of what the permanent number of people will be that will be required to do the cleanup there, which will be a long period of time. I do not know what that will be, but that is many years.

And the way we had this thing arranged, after a lot of working back and forth with the Administration, the President's program, the modernization study, the 2010 report, as it has been called, was going to phase down those operations of the plutonium ingots production and the depleted uranium production. It would be done over a period of time so that that phase-down would occur basically between 1992 and 1994. And that was a time period which was also going to permit the start of the cleanup operation.

The start of the cleanup operation could employ probably most of the people that are there now, or a high percentage of them, at least, if they wished to stay. Now, that was the way it was set up. There was one proposal that was in the current Defense Authorization Bill that would have speeded that up, required increased production, and terminated at the end of 1990.

I got legislation in the bill last night, if we can hold it in the House, that says that the President's 2010 report, the modernization study, is the one that will prevail, not the new schedule that was set up in the report language that was on the floor last night.

So we got that changed so that we stick with that original schedule, so that the people at the plant now, if they wish to remain there, could be the cadre of people used in the cleanup, which will go on a long period of time.

Now, the other thing I got in the bill last night, was a jobs amendment that would provide for job training so that those people could be trained to do clean up work there. Also, it would require that if a plant is to be closed down, that a definition of the environmental problems would have to be made with budget quality data so that we can get on with the cleanup.

You indicated that a new work force was being brought in. The intent was to, as much as possible, train and use existing workers there now for the cleanup effort, if they wished to stay. Nobody can force them to stay, obviously, but if they wish to continue that employment, there would be that opportunity. Job training would be available and be phased in, at Fernald between 1992 and 1994.

The effort to move the closure thing on up and make a more precipitous end at the end of 1990 is what I hope we can keep out in conference with the House, and stay with the original schedule. That will make for a more orderly transition. Most of the people there now would be the main people used for the long term operation.

I know this does not necessarily concern the rest of you that are here this morning. As you are both aware, we have been trying to get epidemiological studies started by the Centers for Disease Control. We have been trying to get that going for about 5 or 6 years now.

First we had to get the dose reconstruction for the area. We finally have the data coming out on that now as to what occurred there at Fernald. I guess I should not be taking all this time to talk just about our parochial interests in Fernald, but they are not unusual problems. They apply to the rest of you and your concerns across the board also.

But there seemed to be some doubt in your mind as to what the plan was for Fernald and I wanted to lay that out just so you understood.

I have taken all my 5 minutes here with a statement, but that is the situation at Fernald. We originally planned to phase down the production in 1994, with the study going on to see if there can be some other production put in there, either private or Government. Meanwhile, the cadre of people there now would be available to continue the cleanup, which would phase in just about that time period.

Mr. DAY. We have been told that—well, we had a layoff this past week, it is going to take effect this Friday. But we are also being told that the budget is a deficit of $35 million right now in order to keep the people employed on-site. They are telling us that the budget is so low that they cannot afford to keep us there and that they are considering another layoff in the very near future. They have already earmarked two classifications that are probably going to be laid off, one of them being the Transportation Department and the other being the Inspection Department.

Chairman GLENN. Well, what I said does not guarantee that there would not be some layoffs, but I am talking about the bulk of people. There has been a downhill slope on employment there for a long time, for the last 7 years I guess.

Mr. DAY. Well, actually the layoffs started taking place March of last year. That was the major layoff.

Chairman GLENN. The big one.

Mr. DAY. Right.

Chairman GLENN. Okay. Well, I just wanted to clarify that. Senator Kohl.

Senator KOHL. Thank you, Senator Glenn.

Ms. Seminario, I am puzzled by something you said in your statement. You stated that the DOE and its contractors have not conducted the proper studies to determine exposure and adverse effects due to their fear of liability. And yet I understand that it is impossible to sue DOE, and it is very difficult to sue the contractor. In fact, when local citizens near the Fernald plant tried to sue a former contractor, DOE came to their defense in court, saying that the contractor had only followed Government orders.

This sounds like a Catch 22 situation, employees and nearby residents may find themselves unable to collect damages. Is this your understanding of the situation?

Ms. SEMINARIO. Yes. You are correct on that, that conveniently, or somehow, that DOE and the contractor seem to be able to escape liability for their past actions with respect to damage to the environment, the public, and also to workers. The only recourse that workers currently have is through the workers' compensation system, which is a state-based system which does not provide adequate coverage for occupational diseases.

And this is one thing that we think really needs to be looked at, is the whole question of responsibility. As the proper studies are conducted, we think, given the experiences that we have had to today and the data that is available, that they will, unfortunately, find adverse health effects in workers and in the members of the public living around those facilities. And then the question becomes, for those individuals, what is to be done?

And that is what we are really—one of the primary concerns that we have today, that we know that there are major problems, there are people affected. And, as we heard today, what is happening to those individuals, they are developing diseases, not able to find employment, not covered by any kind of medical benefits in their current employment and basically left to suffer.

So this is a major problem that we think does have to, in fact, be addressed.

Senator KOHL. As you all may know, the contractors who run the DOE plants are shielded from any economic loss in the event of an accident or a serious release of radioactive materials. This is pursuant to the Price-Anderson Law which Congress reauthorized last year. Given this lack of economic incentive for contractors to operate responsibly, don't you think that Secretary Watkins is going to have a difficult time imposing discipline on these contractors? Mr. Wages?

Mr. WAGES. I was alluding to that, I think, in my comments about the difficulties that this Secretary or any other Secretary is going to have in disciplining contractors. I would suggest that as we look for legislative reform and regulatory reform, we look to contract debarment as a method to enforce compliance, and I mean immediate and swift debarment, because these are lucrative contracts, they were lucrative arrangements. Recognizing that you may not be able to impose some kind of discipline through some economic sanction, the only economic sanction that I know of that would work that is not in some contravention to Price-Anderson is contract debarment.

And the ability to move swiftly to ensure that a large corporation cannot—as Westinghouse, Martin Marietta and others do—set up corporations State to State and, in fact, operate four or five different companies under one large umbrella. So I think that is something that should be looked at and examined, because I think the inability to impose economic sanctions or for the public or anyone else to be able to get to contractors, it significantly diminishes anyone's ability to hold the contractors in line.

Senator KOHL. Any further comment? Do you believe—anybody on the panel—that Congress should pass legislation to specifically allow injured parties to sue the DOE or the contractors for harm resulting from DOE operations?

As you may know, there is a similar bill now pending in Congress to allow victims of U.S. radiation tests to sue for harm. Any comment on that? Mr. Davidson?

Mr. DAVIDSON. If I might, Senator. I totally support, or we would support any legislation in that area. I think, again, as in my testimony, the berylliosis situation is a clear example of where we have definitely fought an uphill battle with our members who have, in fact, been diagnosed as having berylliosis and trying to get any kind of compensation.

What we are left with right now is State workers comp. We only have one case where they have been willing to admit any type of liability in that case, and there has been no monetary settlement. There had been one case that was settled out of court, as we understand, it was a third party lawsuit with Brush Welman Beryllium, a major manufacturer of beryllium in this country, in fact probably the major manufacturer. And in that case, there was a settlement out of court and the agreement was that nobody would discuss what that settlement was.

We totally support the concept of legislating and mandating that workers would have a right to take on the Department of Energy in these kind of cases. The other area is trying to go after the contractor right now is, as you well know, almost impossible and the contractors using as their excuse the mandate from the Department of Energy saying, basically, we do not want any of these cases resolved in favor of the workers.

Ms. SEMINARIO. I think one telling note on that one, the Secretary was up here earlier, he alluded to a case and he said that the Department had lost. And then he went on to say that the Department, in fact, had settled. And I think that in this whole area we know that there is disease in the community, disease among workers, and there is no system right now for addressing it. And whether it is opening up the right to sue DOE or the contractor, or looking at some administrative system of fair and just compensation that gives people the right of access to monetary remuneration, but also payment for medical care, I think is something that the Committee should look at seriously.

Senator KOHL. Do you all agree that your Government has been most unfair, unjust with your workers? Any qualifications to that statement? Anybody would disagree?

Mr. WAGES. I would not make any qualification to that at all. I think it is absolutely dead center. I think it is absolutely true.

Senator KOHL. Does anybody have any comment?

Mr. DAVIDSON. I think as an industry we have been, as Brother Wages alluded to earlier, ignored for many years. The allegations and concerns have been expressed and, unfortunately, it is a pass-the-buck syndrome and it has kind of come to the point now where somebody is going to have to pay the price. And unfortunately, it is culminating now and, again, as another brother, David Day said, with the threat of our jobs, the threat of relocation of these facilities, moving a problem from one area to another.

And we think this is very unfair. In the Department of Energy's 2010 statement, they say the major reason for recommending relocation of Rocky Flats is because of some public sentiment and some Congressional opposition to the plant being where it is at, nothing about really if it is a safety issue.

So there, again, the workers are paying the price and we think it is very unfair to put that on the backs of our membership.

Senator KOHL. The Government takes advantage of the fact that they do not have to function like a private business relative to workers?

Mr. WAGES. That is absolutely true. You know the fundamental problem I think we have here is that you have an institution that operates as an employer above any notion or any standards that any other employer would have to operate under. It is criminal. It is so fundamentally wrong that it strikes at the heart of everything we are about as a society.

Here is a Government agency that literally, because it regulates itself, operates above any other standard that the Congress of the United States imposes on anyone else to do business. That is fundamentally wrong. It is a bigger issue than if we are going to make a couple of changes in the law. It is a fundamental moral issue to the workers who are in these facilities, and the communities.

Senator KOHL. And, at least up to now, no right of redress, nowhere to go, no one to talk to. Is that a fair statement? Anybody?

Mr. DAVIDSON. I guess I am not sure on specifics, if you are talking about health and safety. For general concerns in the area of health and safety, obviously, the Department allows a mechanism for filing health and safety complaints. It used to be the 628, it is now 54 something, the system up until recently has been totally bogged down. They did not even acknowledge the fact that workers—they had received the workers' complaints. Recently with the implementation of technical safety appraisals, that has improved as far as notification of the workers that they received it, but as far as following through and compliance with the concerns, rectifying problems, implementing changes, that is still a very, very slow mechanism.

We have a case where it took literally 3 years to get a duct system in a building cleaned that we felt had build up, that we alleged as a union it would cause a fire, and ultimately did, in fact, cause a fire in the duct after 3 years of apologies from the area manager, Mr. Earl Whiteman, for the Department of Energy, responding to our members who made the allegation, saying we are sorry we have not cleaned it up but we will take care of it.

And so I think that that is indicative of even the mechanisms that have been put in place are not working, for the most part.

Senator KOHL. Thanks, Mr. Chairman.

Chairman GLENN. Thank you. We are going to have to move along. Because of the votes and everything this morning, we are way behind time here. We do have one more panel. We thank you very much. We may have additional questions submitted to you by staff or other members of the Committee. We would appreciate your response to those. Thank you all for being here this morning. Thank you much.

Our next panel is Dr. Alice Stewart, Senior Research Fellow, University of Birmingham, United Kingdom; Dr. Edward Radford, former Chairman of the National Academy of Sciences BEIR III Committee, Biological Effects of Ionizing Radiation; Dr. John Till, Chairman, Technical Steering Panel of the Hanford Dose Reconstruction Study; and Dr. Anthony Robbins, Professor of Environmental Medicine, Boston University School of Medicine, appearing on behalf of the Physicians for Social Responsibility.

We welcome you all this morning. Dr. Stewart, if you would lead off we would appreciate it.

TESTIMONY OF ALICE M. STEWART, M.D., SENIOR RESEARCH FELLOW, UNIVERSITY OF BIRMINGHAM, UNITED KINGDOM [1]

Dr. STEWART. My name is Alice Stewart and I am a physician with a fairly long experience of epidemiology, and I currently work in Birmingham University in England as a Senior Research Fellow and I am holding the post of Senior Investigator for the Three Mile Island study of what, hopefully, will be the Department of Energy cohorts health risk. I am most grateful for being here today and I would like to comment on some of the things that we were told by Secretary Watkins earlier today.

I think the plan that he is outlining for eventual, if not total transfer, at any rate a separate, independent study of health risk of workers in the nuclear industry, will probably be a very good one. But as he has constantly been saying, it will take a lot of time, and it is clear that he is talking in terms of not being able to do anything possibly for another 5 years, and even that might be lengthened out.

But in the meantime, we have really got a crisis on our hands which I think devolves from the following. There is one group of scientists who has come to the conclusion, quite honorably in every way, that there is no cancer risk from radiation at the dose levels that are obligatory in the nuclear industry. The industry was set up with certain restrictions on dose and the current doses, this work reputes to say that there is no cancer risk at this dose level.

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[1] See p. 275 for Dr. Stewart's prepared statement.

If this is so, then the cleanup program that we have got ahead of us will be—at a certain level, it will be a lot of work to do, it will be difficult to do, but you could eventually get things back to the status quo.

But, unfortunately, there is another group of scientists who have come to the conclusion that there is evidence of a cancer risk at this low dose level. Now, the first people, who are complacent, the evidence does come exclusively from workers in the nuclear industry, and mainly from the U.S. workers. The contradictory review comes partly from that source, but also from other studies, mainly to do with children in nuclear exposures.

Now, the point is this, which one is right in my opinion could be settled very fast. The data that has come from the Department of Energy cohorts, notably the Hanford cohort, says that there is a possibility of a risk here, if you analyze the data carefully and allow for the nature of the men who are working there, highly selective men being controlled by health risk and so on and so forth.

This work was cut short at a point where all the evidence has to rest upon men who worked at Hanford between 1944 and 1977 and died in that period. Now, the evidence is good as far as it goes, but all the experts agree that it should be extended to be quite certain.

Now, there is one simple way in which it could be extended and that would be to give access to the same group of research workers to the death certificates since 1977. There are already 12 years of these, and there will be at least 10 years worth of deaths there. And I would suggest to Secretary Watkins that this could be done tomorrow. All he would have to do is to give permission for these extra deaths to be transferred to the TMI Public Health Fund, which is waiting there in the line, because that is a group of people who have produced the evidence so far which rests on this uncertain note.

We were told by Dr. Goldsmith that this could not be done because he had not got permission to release the death certificate data due to some State regulations. But he could overcome that instantly by giving a nominal appointment with the Department of Energy for this work to be done. The knowledge about these deaths can be distributed between any person who is working on behalf of the Department of Energy.

So I would like to suggest that one of the things that should perhaps be suggested to the Department of Energy is why are they not prepared to put this longer series of deaths to the test of whether or not there is trouble. Because if there is trouble at these low dose levels, what it means is something very, very serious. It is telling us that even background radiation, which seems to be benign because it is so uniform, may be causing trouble, and therefore any level above this background is posing some form of health risk, not necessarily very big.

But you can see it in the context of the proposed cleanup of the nuclear industry. In one case there would not be any sense of a problem and the expense could be graded to a much lower level than in the second case.

So I would suggest that we ought to try and persuade the Department of Energy to do this very simple action. Thank you very much.

Chairman GLENN. Thank you. Just a fast question here. We had reference to the 5 rem standard. Do you agree with that, or do you think it should be lower?

Dr. STEWART. Well, at the 5 rem standard I take the line you will get some cancers. I might decide, for political reasons, that it was tolerable. But the present assumption is that there is no risk, and it is wrong. In Hanford where the workers had on average less than a 10th of this dose, we reckoned—in the sample of deaths that we had, and there obviously was not yet full expression of a cancer risk, because the industry only started in 1944 and at that time the deaths only went to 72—we reckoned that at that stage approximately 5 percent of the cancer deaths of the workers had in fact been the result of an occupational exposure.

Chairman GLENN. Well, is there such thing as a zero risk? Or any time you get above zero rems, milirems, there is some risk when you get away from zero; is that correct?

Dr. STEWART. That is what we suggest. The opponents of this view say yes, there will have been a risk but it will have healed itself, it will not express itself in human beings, there would not be realignment of chromosomes and various things, because they insist that they have not found any evidence of this, and therefore there must be some way around this difficulty. But we maintain that there is evidence but that it needs strength.

Chairman GLENN. Dr. Radford, former Chairman, National Academy of Sciences, and now with the Biological Effects of Ionizing Radiation Committee.

Dr. Radford, you were on the Committee before, glad to have you back again.

TESTIMONY OF EDWARD P. RADFORD, M.D., FORMER CHAIRMAN OF THE NATIONAL ACADEMY OF SCIENCES, BEIR III COMMITTEE [1]

Dr. RADFORD. Yes, Senator Glenn, good to see you again. I appreciate the opportunity to be here on behalf of the Three Mile Island Public Health Scientific Advisory Committee, which has been the group that has been trying to get these data.

As I pointed out in my written testimony, we are prepared to get access to perhaps the 250,000 people which we believe are already on computer files at absolutely no expense for the Government, zero. We have the funds even to pay for the transcription of the tapes, so that the argument that you need $36 million worth of data massaging, taking 5 years and then another 5 years before we will get results from them is, in my opinion, a bar to the resolution of these problems we are discussing today, not a step forward, as, unfortunately, I think the Admiral believes.

I would just like to point out a few points about the epidemiological studies themselves. Now, in the first place, as Dr. Stewart has just mentioned, collection of the data on these workers began many, many years ago. And I have to ask the question today for this Committee, why virtually 30 to 40 years later is it necessary now to reconstitute the database on which this should be developed. And I think that speaks as loudly as anything toward the incompetence and the lack of zeal on the part of Department of Energy people to do these studies.

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[1] See p. 280 for Dr. Radford's prepared statement.

For example, the most recent study on the Rocky Flats workers which came out in the American Journal of Epidemiology about 2 years ago had follow-up for only 14 years. Now, to an epidemiologist, this means that the study is at best going to yield minimal information and at worst will be negative when in fact it could be positive if it has been carried out longer. I understand that the Rocky Flats program has been in operation much longer than that and it strikes me as a question why haven't we a longer follow-up study for that group.

Now, these are the kinds of questions that a review body should be requesting, very embarrassing questions. Do we have the bodies set up, for example, the National Academy of Sciences Committee that has been referred to already? Will that Committee ask these kinds of questions?

Unfortunately, I have had experience both with National Academy of Sciences Committee, such as the BEIR III Committee, and also in oversight activities with other research projects such as the Portsmouth Navy Yard workers, and it is very difficult for an oversight committee that meets once every year and reviews very quickly a whole body of information to make really constructive comments about the way the studies are being done.

They are usually given a fait accompli. This is the way we are doing it, and they may be able to make a few minor corrections and changes, but that is often the most they can do.

I have indicated in my written testimony one of the scientific issues that is at stake here, having to do with the so-called dose rate reduction factor. In other words, the theory is that if certain kinds of radiation are given slowly over a long period of time, such as a worker might experience, that risk is somehow less in terms of ultimate cancer than if the dose is given quickly. This is entirely based upon animal data, and as I have indicated in my written statement, it is incomplete animal data, in that the experimental design does not take into account the critical promotion step of cancer induction. And when more recent studies have included a promotion step, the dose response curves are very different when doses are given over longer periods of time.

So this is a scientific issue that should be viewed, I think, as a cautionary note to some of those pronouncements that come from international bodies or from national groups and which I address, for example, in the BEIR III report.

Now, I issued a dissenting statement in the BEIR III report and I submit to this Committee and to anyone in this room that virtually all of the points that I made in my dissenting statement have subsequently been supported by the experimental facts. So that I have not been refuted, in spite of the efforts of the Committee to try to minimize my contribution there.

I would just like to mention that it has come to our attention that the Department of Energy has agreed to provide to the International Agency of Research on Cancer in Lyons, France, a large number of records, including death records, to research workers there for an international study of workers. The question of whether the States in the United States will approve the death certificates being sent to Lyons, France apparently does not enter in. It seems to be very difficult to send them to Birmingham, England.

On that note I will open the discussion for questions.

Chairman Glenn. One question here before we move along. One of our problems in getting some of the epidemiological studies going, particularly around Fernald, was that we had to do this dose reconstruction.

Now, were there just not adequate records kept through the years at these sites? Is that the big problem? Because we tried to get an epidemiological study going, to get CDC in to do this, get the data and do the study quickly. We could not do it that way. We had to do a dose reconstruction. Then we had to go get all sorts of data and they had to make all sorts of estimates. And it would appear, to me at least, with what little I know about dose reconstruction and epidemiological studies, that we are reconstructing enough of this stuff that the basis on which we are going to conduct our epidemiological study is going to be suspect.

Is that valid, or am I off base on that? Are dose reconstruction studies valuable and can they be done accurately?

Dr. Radford. Well, they are valuable if you can do them accurately. In many cases in these environmental situations it is not easy to do them accurately. It is also a means of putting off the fatal day, and it is the same principle that I just referred to in connection with the CEDR, namely, let's wait 5 more years and then maybe we will get around to doing something. By that time for example—well, let's say by the time these dose reconstruction studies have been done, it may be that people have moved away, that you will have lost records, and that the epidemiological side will then become less fine, less sharp.

I would also like to point out that it is possible to do epidemiological studies without necessarily a dose reconstruction by making some assumptions. Now, it makes the dose data less accurate but you can get started right away.

For example, 2 miles from the plant the doses are going to be higher than 5 miles from the plant, and it is going to be higher than doses 10 miles from the plant. So you can start as to stratify by potential exposure without necessarily going in and finding out how much uranium there is in the soil or how much plutonium has been deposited, et cetera.

So the scientists like to have everything nice, and they are not concerned about political, social or moral issues, unfortunately. The concerns of the local people, however, I think need to be addressed more quickly in these cases.

Chairman Glenn. Well, I agree there can be delay. On the other hand, if I were doing a study, I would want as much information and reconstruction, I am sure, as I could possibly get. I used the simpleminded approach when we started into this thing of why don't we just move in there, survey what is there right now, make measurements in the community, make measurements out there around the downwind areas and on the site, and just survey current populations and compare the disease—cancer and whatever other problems there are—with other general populations that are not in that area.

Now, that is just an empirical, very straightforward approach, but it seemed to me that that would at least start us out on knowing what we had in that area. Then if we wanted to do the total reconstruction, all these historical measurements because we find some problems just from that first survey, then we do it that way. But all the epidemiologists and all the dose reconstruction people and everybody under the sun seemed to throw up their hands and think that I was violating every scientific rule in the book. But it seemed like a rather straightforward way to me to go about finding what the current situation is.

Dr. **RADFORD**. Well, Senator, could I ask who they worked for, those epidemiologists?

Chairman **GLENN**. Well, they weren't all working for DOE, they were working for various Government agencies. I won't go into all the details of the situation, but I had to fall back and accept the need for the complete dose reconstruction. And, we are in the process of doing that now.

Dr. **RADFORD**. Could I just add a remark about what Dr. Goldsmith said today about what the DOE has issued to the Three Mile Island Public Health Fund so far. They, under great haste, submitted tapes, that did not include Rocky Flats, on just the worker research centers, and these were the data analysis files, not the database files. That is, they were not all the workers in the various facilities. And, of course, without death certificates or without death data they were useless.

Yet, apparently, they are willing to distribute these to the International Agency of Research on Cancer. So the other thing is that the National Academy of Sciences Committee, which is supposed to meet this fall and perhaps approve the access of these data to us, they will not have the authority to say, yes, give it to the Three Mile Island Public Health Fund.

As I have said, we have the money right now ready to go to do this straight away.

Chairman **GLENN**. Thank you.

Dr. John Till. Dr. Till is Chairman of the Technical Steering Panel of the Hanford Environmental Dose Reconstruction Study. He is a reconstruction expert. Dr. Till.

TESTIMONY OF JOHN E. TILL, PH.D., CHAIRMAN, TECHNICAL STEERING PANEL OF THE HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION STUDY [1]

Dr. **TILL**. Senator, it is good to be here. Thank you very much for giving the opportunity to update you on our study. The objective of the Hanford Environmental Dose Reconstruction Project is to reconstruct the doses that individuals received from radionuclides released to the environment from operations at the Hanford site. The research is supported by the Department of Energy and is being performed by Battelle Pacific Northwest Laboratory. However, the project is directed by an independent Technical Steering Panel, the TSP.

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[1] See p. 283 for Dr. Till's prepared statement.

The responsibility of the TSP is to direct all aspects of this study and to work closely with the public during the course of the project, soliciting their ideas and concerns and conveying the results of the research. It is expected that the dosimetry from this project will be used by the Centers for Disease Control to determine if there is a correlation between exposure and thyroid disease among subjects who lived near the Hanford site during the period of major releases.

The Hanford study is not the only major ongoing dose reconstruction project. Three other groups are currently carrying out dose reconstruction studies, examining historical releases from nuclear weapons testing at the Nevada Test Site. The National Cancer Institute supports two of these projects and the Department of Energy supports the third. The Hanford project evolved primarily from public concerns and was established through agreements between the Department of Energy, the States of Washington and Oregon, and the Indian tribes of the northwest.

For those reasons, the TSP believes that public credibility of our work is as much a goal as is scientific reliability. We are committed to taking unique approaches to public involvement and openness throughout the course of our work. The TSP has been in existence for 15 months and I would like to share with you several steps taken to date and to relate several problems that lie ahead.

At the outset, the TSP clearly established its authority to direct the study, not just provide advice or oversight. Correspondence between the TSP and the Department of Energy document the authority of the panel. This assumption of authority to direct was the first evidence we presented to the public of the panel's purpose and intent. The TSP established its own budget, staff, and handles its own internal affairs. Panel members have contracts which vary according to their time and expertise. However, the TSP is confronted with the stigma that funding is provided by the Department of Energy. In the future, strong consideration should be given to supporting an independent steering panel through another agency. Such an arrangement would further strengthen the credibility of the panel as an independent entity.

Classification of information related to sources and amounts of radioactive substances released at Hanford is a concern of the panel. Although some members of the panel are cleared to review these documents, we have requested that the Department of Energy expedite the declassification of information related to the study. Our request is currently pending at DOE and we expect an answer by the end of August. The Department's concurrence to declassify this information would be another major step in gaining the credibility of the public.

Perhaps the most important and difficult step the TSP has taken is the commitment to the public that our work will be open and available. We encourage the public's presence at panel meetings, subcommittee meetings, work sessions. There are risks, of course, in taking this position. This unprecedented degree of openness carries with it a responsibility of the public to allow the scientific process to proceed undisturbed and to understand the seriousness of misusing preliminary information or conclusions.

Nevertheless, the TSP believes that participation of the public during the course of the study will significantly enhance acceptability and understanding of the final results. We are establishing a clear record of public involvement. We advertise and conduct public meetings, maintain reading libraries, speak to civic organizations about the study, and regularly distribute mailings.

A well defined track record of public information and involvement through the progress of our work is just as important as the accuracy of the scientific work itself. The Hanford project has been perhaps my most difficult personal challenge as a scientist. It is not the normal course of science to invite the public into one's office to conduct research. It is not the normal course of science to begin by assuming one's results are not credible and having to establish this credibility as a part of the job. It is not the normal course of science to be responsible for communicating one's results to the public.

However, I personally see these challenges as breaking new ground and as a major contribution to my profession. The project also offers new challenges for the Department of Energy. It is an opportunity for the Department to consider new approaches to openness and public involvement. It is an opportunity for DOE to carefully evaluate the importance of independent technical direction and studies where questions of conflict of interest may seriously cloud the results. It is also an opportunity for the Department to significantly advance the science of dose reconstruction and risk assessment.

In conclusion, we want to determine the most accurate estimates of potential doses to the public at Hanford. Nevertheless, if we carry out impeccable scientific research and it is not perceived as such by the public, we have not succeeded in our objective. We believe the research at Hanford may provide a model for DOE in the future as the Department increases dose reconstruction, site cleanup and other health and safety improvements.

Again, Senator, thank you for this opportunity to share our experience regarding this very important scientific project.

Chairman GLENN. Thank you, Dr. Till. Just one follow-up question before we move on to Dr. Robbins. Is my empirical approach that I talked about a few moments ago useful? I know from a pure scientific standpoint and wanting to do things very carefully, that the way you are doing it is exactly the way it should be done, but does take a lot of time.

Since we have had such a long gap here, decades of a lack of information, is the empirical approach valuable at all, or should we do the complete reconstruction studies before we try and do epidemiological studies?

Dr. TILL. Well, Senator, you would make a good scientist, believe me. And this is the kind of thinking that we have to do. Unfortunately, dose reconstruction is not simple at all. In certain situations where one is releasing long lived radionuclides, for example at Fernald, that makes a lot of sense, go out, take measurements, let's see what is there.

Now, of course, we have to give careful consideration to the movement of that uranium or plutonium that might have occurred over the years. But you have to understand our situation, for example, at Hanford where in the first part of this study we are dealing with Iodine 131. Of course it is a short lived radionuclide that is no longer present.

But I should also point out that Dr. Radford's point about doing epidemiology ahead of dose reconstruction, sure that makes sense. I do not think in every case we can say there is a consistent pattern that we have to follow. We must look at these sites on a case-by-case basis and in some situations we may want to do the epidemiology first and then decide if we need to do a dose reconstruction. And it can work vice versa just as well.

Finally, just to answer this question, at Hanford I think we have a very unique, good approach, because we are working closely with the Centers for Disease Control as we proceed through the dose reconstruction. So they are working with us hand in hand. They will not have to wait until we are finished with the study to begin their work, or even get some preliminary results.

Chairman GLENN. Thank you. Dr. Anthony Robbins, Professor of Environmental Medicine, Boston University School of Medicine, appearing on behalf of Physicians for Social Responsibility.

Dr. Robbins, good to see you.

TESTIMONY OF ANTHONY ROBBINS, M.D., PROFESSOR OF ENVIRONMENTAL MEDICINE, BOSTON UNIVERSITY SCHOOL OF MEDICINE [1]

Dr. ROBBINS. Thank you, Mr. Chairman. I am Anthony Robbins, Professor of Public Health at Boston University. I am also the Treasurer of International Physicians for the Prevention of Nuclear War and a member of Physicians for Social Responsibility.

In the past I have served as the Executive Director of the Colorado Department of Health and, as you know, Senator, as the Director of the National Institutes for Occupational Safety and Health.

Who would have thought when I called you about 10 years ago and asked you to help me with the Department of Energy and get our researchers into the Portsmouth, Ohio, weapons facility that we would still be fighting for open information and access for researchers. But we have had a tough adversary in the Department of Energy.

I have two important observations to make regarding what we have learned in the last 2 years about the production of nuclear weapons in the U.S. First, we have an important opportunity to improve scientific understanding of how radiation affects people—I will come back to this in a minute—and second, we face a public health emergency in and around the plants that have built nuclear weapons. I will not go over the problems. Your Committee knows it well. This Committee has helped document these problems. And to his credit, the Secretary of Energy has admitted his Department is a disaster.

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[1] See p. 286 for Dr. Robbins' prepared statement.

However, it seems to me his response to this situation falls short of the major public health mobilization that we need. We have a public health emergency on our hands. Revelations of the last few years suggest that workers at the Department of Energy nuclear weapons production facilities and people in neighboring communities may have been exposed to unacceptably dangerous levels of radiation and toxic chemicals. For some of these individuals who, in fact, have been exposed, secondary prevention—that is, early detection of disease—may still be possible if the Department of Energy will drop its secrecy and allow qualified researchers and experts access to the data to help them.

The health of many people may depend on identifying the individuals or populations that have been overexposed. Far more important are the revelations about continuing risk of exposure in and around nuclear weapons plants, radioactivity that was lost, spilled or leaked in the past might still be present where people live and work. And Department of Energy safety practices may be inadequate to protect workers in neighboring communities in future accidents.

Until there is clear evidence that these risks have been effectively managed, the Department of Energy and public health officials must act as if there is a continuing direct threat to people and the environment. In public health, the extent and the speed of the response must reflect the gravity of the problem. DOE's response is not commensurate with the possible seriousness of risk.

Secretary Watkins has stated that he cannot trust the information he receives from subordinates within DOE. The Department has revealed, I might add, under pressure from public interest and the public health community, a history of very serious problems. Thus, we must treat these plants as public health emergencies until independent public health professionals, acting in their official capacity, their public health capacity, with responsibility for the health of the public and the people, and not as consultants to DOE, until these professionals have rendered considered judgment on the extent and seriousness of the current risks. The whole tradition of public health makes providing reassurance to the public—I am afraid that is what is happening—beyond what our knowledge can justify, an intolerable breach of our responsibility.

The more we learn, the more we are concerned for the public's health. Recent reports confirmed our earlier concerns that environmental releases at many of the DOE facilities have been larger than previously reported, and in the case of the illegal incineration at Rocky Flats, these releases have continued over an extended period of time.

The International Physicians for the Prevention of Nuclear War has now learned more about the 1957 nuclear accident at Kyshtym in the Soviet Union, and we are increasingly concerned about the parallels between the safety of waste storage at Kyshtym and of that at Savannah River Plant in South Carolina. Does the Secretary of Energy have any basis for confidence in the safety of the plant at Savannah River? We believe that the new openness in the Soviet Union presents an opportunity for our Department of Energy to learn in order to avoid a similar disaster here. The

Soviet Congress, too, is holding hearings on nuclear weapons production safety.

Our Nation must assess four risks immediately: the risk of current and future exposures from past releases to the environment; the risk of previously unconfirmed past exposures; the risk of future worker exposures related to protecting the public from the continued presence of radioactive and toxic materials in the environment. You heard the labor panel testify that the cleanup is likely to be dirtier than the operation of these plants. And fourth, the risk of large human exposures from accidents or failures in current weapons production operations.

These determinations and risks will require information on environmental releases, the current state of environmental contamination, measurements and estimates of human exposure, and projections of future environmental documents and populations at risk. This is a big job, because it is more than just a long-term cleanup program. It is an emerging public health protection program. This job requires open access to the data that bear on health, safety and the environment, and it requires an end to the secrecy and conflict of interest that has created these problems.

Mr. Chairman, access to all historical data on releases of radioactive and toxic substances into the environment and information of exposures to populations will make possible improvements in scientific understanding of health effects of radiation. The Department of Energy possesses the world's most extensive collection of worker exposure data. This wealth of information, even if imperfect, represents the basis for major improvements in scientific knowledge about how people respond to environmental radiation.

At the present, when a public health official wants to know what kind of injury—cancer, birth defects or other disease—to expect from a particular exposure to radiation, he or she uses tables and formula such as Dr. Radford has been involved in developing. The formulae have been developed by analyzing existing epidemiological and experimental data on human and animal exposure and their observed effects. The concept is fine, but the data are limited. For many kinds of radiation we still use estimates gleaned from the effects of Hiroshima and Nagasaki atomic bomb explosions.

This is, quite obviously, not a good way to estimate the effects of long term, low level radiation exposure. Unfortunately, it is the best it is the best we have. Studies of 600,000 or more workers for whom the Department of Energy has exposure records would make a major contribution. Almost 300,000 of these records are on computer tape and could be easily available.

You have heard this at length. I am pleased that the Department of Energy has expressed an interest in making its data available to researchers at the National Academy of Sciences. However, I am very distressed at DOE's lack of sense of urgency. Last Thursday, Mr. Chairman, I called the President of the National Academy of Sciences Institute of Medicine. The Institute of Medicine is the part of the National Academy of Sciences that has a responsibility for health issues. And he had never heard of a Department of Energy request to the National Academy of Sciences for help in epidemiology and maintenance of a records repository. I suggest this is one indication that the DOE is still dragging its feet.

In spite of continued secrecy at DOE, independent scientists and public health officials such as the Three Mile Island group are trying to get answers. Physicians for Social Responsibility has created a Physicians' Task Force on the Health Risk of Nuclear Weapons Production. The task force has three objectives—to assure that data that can be useful for the public health become available from DOE's nuclear weapons production facilities; to establish standards for epidemiological, environmental and occupational studies that can further the protection of the public health, and to provide an assessment of what can be learned about public health risks associated with nuclear weapons production facilities in the United States.

In addition—and this is the area that I am personally involved in—the International Physicians for the Prevention of Nuclear War has established an international commission of physicians, scientists and environmentalists on the health and environmental consequences of nuclear weapons production globally. The commission will describe the scope of hazards from nuclear weapons production in countries with nuclear weapons and in others that contributed to their production.

For each nuclear weapons production facility in the world, the commission will seek information about the kinds of radioactive and toxic agents that have been released from the facility and attempt to assess whether facility workers in surrounding communities have been affected by these releases. There is no reason to believe that other nuclear states have produced nuclear weapons more safely or with less health risks to the public than we have in the United States.

Mr. Chairman, in view of the time, I would appreciate it if the Committee could make part of the written record a description of these studies undertaken by PSR and PPNW.[1]

Chairman GLENN. The statement will be included.

Dr. ROBBINS. Thank you.

Chairman GLENN. Thank you all very much. You have been very patient and we are going to end shortly here.

I would like to get back to this 5 rems if I could. Does anyone have any comment on that? You have all worked in this field. Are you happy with the 5 rem limit? Should it be lowered? Is that reasonably safe? Is there any level that is safe outside zero?

We know we get—I guess Washington, D.C., gets 90, 95, maybe 100 millirems per year from just natural background radiation. You get out to Denver up above about 5,000 feet of the atmosphere and you get up to around 150, 160 millirems just for living there.

Now, we know we can get something like—a dental x-ray of approximately 55, 30, a chest x-ray maybe 45, 50 millirems.

Now, what is safe? Are even those a danger to us?

Dr. RADFORD. Well, Senator, I have addressed this issue on many occasions in the past, even before your Committee, I believe.

Chairman GLENN. Yes, you sure have. Have you changed your views?

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[1] See p. 327.

Dr. **Radford**. I have not changed my views. I think the evidence is even stronger that the current occupational limit of 5 rems per year is much too high. The industry counters this by saying, well, they are not supposed to consider 5 rems as the limit, but it is supposed to be as low as reasonably achievable. But we heard one of the workers here today say that they are told, oh, anything up to 5 is okay.

So that the numerical limit is an important datum that has to be applied to these plants, because we cannot rely on a production manager saying, well, we are going to keep everything well below that.

Chairman **Glenn**. What do you think it should be?

Dr. **Radford**. Well, I have recommended a 3-tiered approach. I am not sure it is too practical, but I will give it to you just to give you an illustration.

I think for workers up to the age of 35 it should be a half a rem per year total whole body dose; from the age of 35 to 50 it could be 1 rem per year; and over the age of 50 it can be 2 rems per year.

Now, one of the effects this would have, if you could make this a practical technique, is that the older workers who are more experienced would be the ones doing the more difficult jobs. It is the other way around in the industry today. The difficult jobs are done by the youngest workers who have the least seniority, and the result is they get the highest doses. So currently it is working the other way.

Chairman **Glenn**. Why the different levels for different ages, is it just the cumulative effect?

Dr. **Radford**. It is the fact that the workers will have a greater lifespan in which to express the cancer and therefore they should be protected more significantly at a younger age. But there also is some differential sensitivity. That is, younger workers may be at greater sensitivity to radiation at the same age; women because of possible pregnancy, men because of genetic effects. So for both reasons, it should be lower for the younger workers.

I should point out that in the UK the National Radiological Protection Board has already recommended to the government that the exposure limit should be decreased to 1.5 rems per year, and this has sent shockwaves throughout the nuclear industry all over the world, just that one thing.

Now, if the International Commission on Radiological Protection does indeed take a serious view of the new evidence, I think they will also recommend a lowering, in which case then we may be on the way to really protecting the workers.

Chairman **Glenn**. But .15 gets you down close to background radiation.

Dr. **Radford**. No, 1.5 rems per year.

Chairman **Glenn**. Oh, rems per year.

Dr. **Radford**. I would just like to say that the philosophical problem, the one you just expressed when you opened this, saying, well, what risk is acceptable? That is the tough nut, and politicians do not like to make that judgment, regulators do not like to make the judgment.

Chairman **Glenn**. And scientists do not like to make that judgment.

Dr. Radford. Well, they do. Unfortunately, they do. And they are the least appropriate people to be making that judgment. The recommendations I just made to you are one vote, but I would like to get the workers in on it and be able to say, well, the risks are such if you get exposed to this for 30 years you will have a, let's say, a 10 percent chance—increased chance—of getting cancer, is that okay?

And if they agree that it is okay, well then, fine. But that is the way it should be put.

Chairman **Glenn.** Any of the rest you want to comment? We are going to have to end shortly. Any other brief comments from anyone else?

You have all been very patient and we are past one o'clock now and I have to get back over to the floor with amendments on the authorization bill. So we are going to have to end this morning. It has been a long session here. We appreciate your forbearance. Thank you all for being here.

The Committee will stand in recess subject to the call of the Chair.

[Whereupon, at 1:05 p.m., the Committee adjourned subject to the call of the Chair.]

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APPENDIX

STATEMENT OF SENATOR TIM WIRTH
REORGANIZATION OF DOE'S RADIATION RESEARCH PROGRAM

Thank you Senator Glenn for the opportunity to appear before the committee. Radiation research is an important issue and I appreciate the chance to testify.

I would also like to commend Secretary Watkins and thank him for his attempts to elevate health and safety priorities within DOE. Since I came to Congress in 1974, I have been deeply concerned about the affects of DOE nuclear weapons facilities on the health of workers and nearby residents. This year, as I have done in several prior Congresses, I have introduced the Radiation Research Reorganization Act, which would transfer the authority to conduct epidemiological studies of the effects of radiation from the Department of Energy to the Department of Health and Human Services.

The issue is a very simple one: trust. How can the citizens of Colorado -- or any other state with a nuclear weapons facility -- trust the Department of Energy when the FBI and the State of Colorado are investigating serious violations of environmental and safety regulations at the Rocky Flats nuclear weapons facility? Coloradans have serious concerns about the federal allegations including illegal, unpermitted waste storage, disposal and incineration; false certification of compliance with state environmental law; improper employee training in handling hazardous wastes; and unsafe working environments. I believe it is unfair to ask citizens to live in an environment filled with uncertainty about their own well-being.

In June, Secretary Watkins acknowledged that "the underlying operating philosophy and culture of DOE was that adequate production of defense nuclear materials and a healthy, safe environment were not compatible objectives." None of us can deny that the American public has lost confidence in the Department of Energy's ability to protect the health and environment of its workers and the people living near DOE nuclear facilities. Secretary Watkin's commitment to turning this tide is heartily welcomed.

I remain concerned, however, that some of the steps announced in Secretary Watkin's 10-point initiative to set a new course for the Department of Energy do not go far enough to be effective or to make a long-term difference. To restore public confidence in DOE's programs and ensure the safety of workers and residents, I believe the epidemiology program should be handled by a department that, unlike DOE, has no conflict of interest between meeting strict production deadlines and ensuring health and safety -- specifically, Health and Human Services.

Included in Secretary Watkins initiative is a proposal to name an "independent" panel to advise him as he tries to restructure DOE epidemiological programs. Though I implicitly trust the current Secretary's integrity, I must question how "independent" the panel can be if it is appointed by and accountable only to the Secretary. My legislation would establish a truly independent advisory panel, approved by the President with the advice and consent of the Senate, consisting of representatives of those most affected by and knowledgeable about radiation research: organized labor unions active at DOE nuclear facilities, the Secretary of Energy, public interest groups concerned about the health effects of radiation and state public health departments and agencies that have a DOE nuclear facility in their territory.

Secretary Watkins has indicated that DOE and the National Academy of Sciences will establish a comprehensive data repository for all relevant epidemiologically information on past and present DOE and contract workers. As I understand it, the data, which can be used by any "qualified researcher", would make only completed health studies available for review -- but not the records of intentional and accidental radiation releases from defense nuclear facilities.

Testimony given last month before the House Panel on Procurement and Military Nuclear Systems by DOE Under Secretary John Tuck asserted that DOE would pay more attention to worker health studies than any other agency. With all due respect, I would suggest that the track record indicates otherwise: DOE to date has under-administered its radiation research program. DOE employs only two people to administer this entire program. Discussions with independent experts indicate that at least a dozen trained experts are needed to properly evaluate the work of the contracted studies and adequately focus the radiation research program in order to determine, with some certainty, whether these plant operations are endangering workers and residents.

Mr. Tuck also said that with the AIDS epidemic and other pressing issues, HHS "already has an extremely full plate," and that it is "probably unrealistic to assume that studies of DOE workers are going to receive greater attention there than they do at DOE." My bill would ensure that HHS would have the resources it needs to complete this work. It transfers all the funds, personnel, responsibilities and data that DOE now dedicates to this work to HHS. While my bill would broaden the mandate of the organizations under HHS and the Public Health Service, they would be receiving additional funding to cover their expenses.

In this country, we should not have to make a choice between high standards in AIDS research or radiation health research, and we don't have to under the provisions of my bill.

In addition to transferring authority, transferring funding and creating an advisory panel, my bill would:

- Ensure that HHS has adequate access to all relevant DOE records and data;
- Ensure that HHS has access to or is able to develop reliable data on radiation releases and exposure levels;
- Direct HHS to coordinate research with appropriate state agencies responsible for public health;
- Require that HHS conduct a comprehensive review of existing information and studies related to the effects of radiation exposure on health, including studies conducted by DOE, federal and state agencies and independent researchers;
- Ensure that steps are taken to ensure the confidentiality of information pertaining to individuals who are the subjects of the records; and
- Ensure that appropriate security clearances are obtained by researchers using classified materials.

Trust is hard to earn, and easy to lose. DOE has lost the public trust, and it will take much difficult work and concrete action to earn it back. I strongly believe that the only way to restore public confidence in radiation health research is to transfer authority to conduct epidemiological studies to an agency whose primary mission is health, HHS. HHS, with the Agency for Toxic Substances and Disease Registry, the Centers for Disease Control, the National Institutes of Health and the Food and Drug Administration under its umbrella, is the logical home for health research of all kinds. These various entities have all studied, from their particular perspectives, the health effects of radiation. HHS has a well-established program of cancer study as well as independence from the overshadowing mandate of nuclear weapons production.

We have all heard the old adage -- acknowledging the problem is half the battle. I commend Secretary Watkins for acknowledging the problems DOE has with its radiation research. I commend Secretary Watkins for trying to institute some changes in DOE's research program. But in order to make long-term changes -- ones that will increase public trust in DOE -- I believe the next step must be taken. A statutory transfer of radiation research responsibilities to HHS should occur so that effective research can be continued long after the Secretary's tenure. We owe nothing less to DOE's workers and neighboring communities.

DEPARTMENT OF ENERGY
UNITED STATES OF AMERICA

WRITTEN STATEMENT OF ADMIRAL JAMES D. WATKINS

SECRETARY OF ENERGY

BEFORE THE

SENATE COMMITTEE ON GOVERNMENTAL AFFAIRS

WEDNESDAY, AUGUST 2, 1989

MR. CHAIRMAN, MEMBERS OF THE COMMITTEE, I APPRECIATE THE OPPORTUNITY TO COME BEFORE YOU TODAY TO DISCUSS THE DEPARTMENT OF ENERGY'S RADIATION HEALTH EFFECTS RESEARCH PROGRAMS AND OTHER RELATED ISSUES. MR. CHAIRMAN, IN YOUR LETTER OF JULY 14, YOU REQUESTED THAT I ADDRESS THE FOLLOWING ISSUES; DOE'S EPIDEMIOLOGY PROGRAM AND MY RECENT INITIATIVES IN THAT AREA; DOSE RECONSTRUCTION ACTIVITIES THAT ARE UNDERWAY AT THE HANFORD AND FERNALD SITES; THE DECLASSIFICATION OF DOCUMENTS RELATING TO DOSE RECONSTRUCTION STUDIES; DOE'S FOOD AND DRUG ADMINISTRATION (FDA) APPROVED USE OF DRUGS KNOWN AS CHELATING AGENTS; AND THE RESPONSIVENESS OF DOE TO RADIATION EXPOSURE GUIDANCE PROPOSED BY THE ENVIRONMENTAL PROTECTION AGENCY.

ACCOMPANYING ME TODAY ARE MR. JOHN MEINHARDT, ACTING ASSISTANT SECRETARY FOR DEFENSE PROGRAMS, MR. PETER BRUSH, ACTING ASSISTANT SECRETARY FOR ENVIRONMENT, SAFETY, AND HEALTH, AND DR. ROBERT GOLDSMITH, THE DIRECTOR OF DOE'S EPIDEMIOLOGIC RESEARCH PROGRAM.

I AM PARTICULARLY PLEASED TO HAVE THE OPPORTUNITY TO ADDRESS THE DEPARTMENT'S EPIDEMIOLOGIC RESEARCH ACTIVITIES, AND MY RECENT INITIATIVES IN THAT AREA, AS I BELIEVE THESE ACTIVITIES ARE OF CRUCIAL IMPORTANCE TO THE SUCCESSFUL FULFILLMENT OF THE DEPARTMENT'S RESPONSIBILITY TO PROTECT THE HEALTH OF BOTH ITS EMPLOYEES AND THE PUBLIC AT LARGE.

PURSUANT TO THE AUTHORITY OF THE DOE ORGANIZATION ACT OF 1977

(P.L. 95-91), THE DEPARTMENT OF ENERGY SUPPORTS EPIDEMIOLOGIC RESEARCH ON DOE AND CONTRACT EMPLOYEES TO DETERMINE THE HUMAN HEALTH EFFECTS OF ENERGY GENERATION AND USE AND THE EFFECTS OF DOE FACILITY OPERATION.

DOE'S EPIDEMIOLOGIC RESEARCH ACTIVITIES THAT INCLUDED CONTRACT EMPLOYEES BEGAN IN EARNEST IN 1964 WITH THE ATOMIC ENERGY COMMISSION'S INITIATION OF THE HEALTH AND MORTALITY STUDY. THE HEALTH AND MORTALITY STUDY IS A LARGE EPIDEMIOLOGIC RESEARCH INVESTIGATION OF MORTALITY AMONG CURRENT AND FORMER DOE WORKERS. THIS STUDY IS CONDUCTED BY CONTRACT SCIENTISTS WITH ADVICE FROM INDEPENDENT PANELS, AND ALL OF THEIR RESULTS ARE PUBLISHED IN PEER-REVIEWED SCIENTIFIC JOURNALS.

THE HEALTH AND MORTALITY STUDY EVENTUALLY WILL INCLUDE ALL MULTI-PROGRAM LABORATORIES, NUCLEAR MATERIALS PRODUCTION FACILITIES, ENRICHMENT FACILITIES, AND WEAPONS TESTING AND FABRICATION COMPLEXES.

TO DATE, STUDIES HAVE BEEN EITHER COMPLETED OR ARE UNDERWAY AT TWO NATIONAL LABORATORIES (LOS ALAMOS AND OAK RIDGE), FOUR WEAPONS TESTING AND FABRICATION FACILITIES (Y-12, MOUND, ROCKY FLATS, AND SAVANNAH RIVER), TWO NUCLEAR MATERIALS PRODUCTION FACILITIES (HANFORD AND THE FEED MATERIALS PRODUCTION CENTER), THREE ENRICHMENT FACILITIES (OAK RIDGE, PADUCAH, AND PORTSMOUTH GASEOUS DIFFUSION PLANTS), AND THE FORMER MANHATTAN ENGINEERING

DISTRICT SITES IN UPSTATE NEW YORK.

THIRTY-FIVE DOE-SUPPORTED EPIDEMIOLOGICAL STUDIES OF DOE WORKERS HAVE BEEN PUBLISHED IN PEER-REVIEWED SCIENTIFIC JOURNALS. DOE'S EPIDEMIOLOGIC SURVEYS CONTRIBUTE TO THE KNOWLEDGE BASE OF RADIATION EPIDEMIOLOGY WHICH INCLUDES OTHER STUDIES SUCH AS THAT OF THE JAPANESE ATOMIC BOMB SURVIVORS. THIS HAS BECOME THE FOUNDATION FROM WHICH ORGANIZATIONS SUCH AS THE NATIONAL COUNCIL ON RADIATION PROTECTION MEASUREMENTS AND THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION FORMULATE RADIATION HEALTH PROTECTION GUIDELINES.

IN GENERAL, THE RESULTS OBTAINED FROM DOE'S EPIDEMIOLOGIC STUDIES ARE TRANSLATED INTO POLICY ACTIONS BASED ON RECOMMENDATIONS FROM THESE NATIONAL AND INTERNATIONAL ORGANIZATIONS AS WELL AS REGULATIONS THAT ARE PROMULGATED BY FEDERAL AGENCIES. HOWEVER, IF THE RESULTS OF ANY OF OUR EPIDEMIOLOGIC INVESTIGATIONS INDICATE THAT IMMEDIATE ATTENTION NEEDS TO BE DIRECTED AT A SPECIFIC WORK PLACE HAZARD, THEN ACTION WOULD BE TAKEN IMMEDIATELY BY DOE.

IN FY 1989, THE DOE EPIDEMIOLOGY PROGRAM WAS FUNDED AT $26.6 MILLION. $17 MILLION OF THAT TOTAL WAS ALLOCATED TO THE RADIATION EFFECTS RESEARCH FOUNDATION, THE JOINT PROJECT OF THE U.S. AND JAPANESE GOVERNMENTS THAT IS EXAMINING THE PHYSIOLOGICAL EFFECTS OF RADIATION ON THE SURVIVORS OF THE HIROSHIMA AND

NAGASAKI BOMBINGS. THIS LEAVES A TOTAL OF $9.6 MILLION TO CONDUCT OTHER HUMAN HEALTH RESEARCH AND TO MONITOR THE HEALTH OF OR OUR WORKERS.

ALTHOUGH I BELIEVE THAT WE HAVE THE FOUNDATION FOR A COMPREHENSIVE EPIDEMIOLOGIC PROGRAM AT DOE, I MUST TELL YOU THAT I WAS NOT PLEASED WITH THE CONDITION IN WHICH I FOUND THE PROGRAM WHEN I ASSUMED OFFICE LAST MARCH. IT IS BURIED DEEP WITHIN THE BUREAUCRACY. IT IS UNDERSTAFFED, UNDER FUNDED AND UNDER UTILIZED. THE PROGRAM HAS SOME SIGNIFICANT FLAWS. MY RECENT INITIATIVES IN THIS AREA ARE INTENDED TO CORRECT THESE FLAWS.

THE EPIDEMIOLOGY PROGRAM AT DOE HISTORICALLY HAS SUFFERED FROM THE LACK OF ATTENTION BY THE SENIOR LEVELS OF DOE MANAGEMENT. THIS LACK OF ATTENTION IS VIVIDLY DEMONSTRATED BY THE FACT THAT DOE HAS HAD ONLY ONE FULL TIME PROFESSIONAL PERMANENTLY ASSIGNED TO OVERSEE ALL OF THE EPIDEMIOLOGIC RESEARCH THAT THE DEPARTMENT SUPPORTS. ONE PERSON, REGARDLESS OF HOW ABLE HE OR SHE IS, CANNOT EFFECTIVELY MANAGE A PROGRAM OF THE COMPLEXITY AND MAGNITUDE THAT DOE'S EPIDEMIOLOGIC RESEARCH ACTIVITIES SHOULD REPRESENT. AS AN INTERIM MEASURE, I HAVE INSTRUCTED THE DIRECTOR OF THE OFFICE OF ENERGY RESEARCH TO DETAIL ADDITIONAL PERSONNEL TO THE EPIDEMIOLOGY PROGRAM.

BECAUSE I KNOW THAT I NEED THE ASSISTANCE OF INDEPENDENT EXPERTS TO PROPERLY REORGANIZE THE PROGRAM, I HAVE HAD TO CURB MY

INSTINCT TO IMMEDIATELY RESTRUCTURE THE PROGRAM AND DRAMATICALLY SHIFT RESOURCES MYSELF. AFTER I RECEIVE THE REPORT OF THE SPECIAL ADVISORY COMMITTEE THAT I HAVE CHARTERED TO EVALUATE DOE'S EPIDEMIOLOGICAL EFFORTS, I WILL ADDRESS THE LONG-TERM STAFFING NEEDS OF THE PROGRAM AND ENSURE THAT THE NEEDED PERSONNEL ARE PERMANENTLY ASSIGNED THERE. IN FACT, ONE OF THE PRINCIPAL TASKS OF THIS ADVISORY COMMITTEE IS TO DEVELOP AN APPROPRIATE STAFFING PLAN AND RECOMMEND ADEQUATE FUNDING LEVELS.

ALTHOUGH OUR OWN CONTRACT SCIENTISTS USE RAW DOE WORKER DATA TO CONDUCT THEIR EPIDEMIOLOGIC RESEARCH, I AM CONCERNED BY THE INACCESSIBILITY OF THIS SAME DATA TO THE REST OF THE SCIENTIFIC COMMUNITY. CURRENTLY, RESEARCHERS WHO ARE NOT DIRECTLY AFFILIATED WITH THE DEPARTMENT CANNOT GAIN ACCESS TO THE WORKER DATA THAT IS OWNED BY DOE OR ITS CONTRACTORS. THIS SITUATION IS NOT IN THE BEST INTEREST OF SCIENCE (I.E., NOT ACCESSIBLE BY OTHER SCIENTISTS), THE DEPARTMENT (I.E., LACKS CREDIBILITY) OR, MOST IMPORTANTLY, OUR WORKERS (I.E., THEY FEEL THEY ARE NOT RECEIVING THE FULLEST EXAMINATION). THIS IS AN UNACCEPTABLE SITUATION AND I AM IN THE PROCESS OF CHANGING IT.

I HAVE MENTIONED A FEW OF THE PROBLEMS THAT EXIST WITHIN OUR EPIDEMIOLOGY PROGRAM. BEFORE I EXPLAIN HOW I INTEND TO CORRECT THOSE PROBLEMS, IT MAY BE USEFUL FOR ME TO ADDRESS THE ISSUE OF WHY DOE SHOULD BE INVOLVED IN EPIDEMIOLOGIC RESEARCH AT ALL.

I AM FIRMLY COMMITTED TO ENSURING THAT DOE ACTIVELY PURSUES EPIDEMIOLOGIC RESEARCH ON THE HUMAN HEALTH EFFECTS OF ENERGY GENERATION AND USE AND DOE FACILITY OPERATION. THE DOE MISSION IS FOCUSED ON ENERGY GENERATION AND USE. WE OPERATE THE FACILITIES IN WHICH THIS MISSION IS CARRIED OUT, AND WE EMPLOY THE PEOPLE WHO MAKE IT A REALITY. THERE IS NO OTHER AGENCY WITHIN THE FEDERAL GOVERNMENT THAT IS MORE APPROPRIATELY POSITIONED TO CONDUCT EPIDEMIOLOGICAL RESEARCH IN THE ENERGY FIELD.

AS AN EMPLOYER, DOE HAS A MORAL AND ETHICAL RESPONSIBILITY TO MONITOR THE HEALTH OF ITS WORKERS IN AN EFFORT TO ENSURE THAT ALL POTENTIALLY HARMFUL ASPECTS OF THE WORK ENVIRONMENT ARE CONTROLLED. EPIDEMIOLOGIC SURVEYS REPRESENT ONE WAY IN WHICH DOE MEETS THIS RESPONSIBILITY.

I AM RESOLUTE IN MY BELIEF THAT THE RESPONSIBILITY FOR THE HEALTH AND SAFETY OF DOE WORKERS MUST BE DIRECTLY ASSIGNED TO DOE AND IMPLEMENTED THROUGH A CLEARLY DELINEATED LINE MANAGEMENT STRUCTURE. EPIDEMIOLOGIC SURVEYS OF OUR WORK FORCE REPRESENT A KEY ELEMENT OF OUR PROGRAMMATIC EFFORTS TO SUCCESSFULLY MEET THIS OBLIGATION.

IN ADDITION TO DOE'S COMMITMENT TO PROTECT THE HEALTH AND SAFETY OF ITS EMPLOYEES, THE DEPARTMENT HAS, AS AN INHERENT PART OF ITS MISSION, A LEGITIMATE INTEREST IN THE HEALTH EFFECTS THAT RESULT

FROM LOW LEVEL EXPOSURES TO IONIZING RADIATION AND TO CHEMICAL CARCINOGENS DURING NUCLEAR MATERIALS PRODUCTION.

I RECOGNIZE THAT DOE MUST TAKE AGGRESSIVE MEASURES TO ENHANCE ITS EPIDEMIOLOGIC RESEARCH ACTIVITIES TO ENSURE THAT ALL FACETS OF THE PROGRAM REPRESENT EXCELLENCE. I HAVE INITIATED A FOUR POINT PROGRAM TO ACCOMPLISH THIS GOAL.

FIRST, I INTEND TO OBTAIN AN INDEPENDENT EVALUATION OF DOE'S CURRENT EPIDEMIOLOGICAL ACTIVITIES AND GUIDANCE ON HOW THE PROGRAM SHOULD BE RESTRUCTURED FROM RECOGNIZED EXPERTS IN THIS FIELD. A SPECIAL ADVISORY COMMITTEE, COMPRISED OF INDIVIDUALS WHO HAVE EXPERTISE IN SUCH AREAS AS PUBLIC, ENVIRONMENTAL, AND OCCUPATIONAL HEALTH, EPIDEMIOLOGY, AND RESEARCH STANDARDS, HAS BEEN CHARTERED. THE COMMITTEE HAS BEEN GIVEN A BROAD MANDATE TO SCRUTINIZE VIRTUALLY EVERY ASPECT OF DOE'S EPIDEMIOLOGY PROGRAM. THEIR CHARTER CHARGES THEM WITH AN EXAMINATION OF:

- THE GOALS AND OBJECTIVES OF THE EPIDEMIOLOGIC RESEARCH PROGRAM (THE PROGRAM).

- THE MANAGEMENT AND REPORTING STRUCTURE OF THE PROGRAM.

- THE FULL-TIME EQUIVALENTS (FTE'S) AND BUDGET RESOURCES ALLOCATED TO THE PROGRAM (BOTH INTERNALLY TO THE DOE AND EXTERNALLY TO CONTRACTORS).

- THE USE OF CONTRACT SCIENTISTS FOR ONGOING AND SPECIAL PROJECTS.

- THE QUALITY CONTROL MECHANISMS IN THE PROGRAM, INCLUDING DATA COMPLETENESS AND ACCURACY, AND DATA MANAGEMENT (ARCHIVING AND ACCESS).

- THE UTILITY AND FEASIBILITY OF TRANSFERRING THE EPIDEMIOLOGIC RESEARCH FUNCTION, INCLUDING THE NECESSARY DATA, TO ANOTHER ENTITY.

- MAINTENANCE AND ACCESS TO RELATED RECORDS SUCH AS EXPOSURE INCIDENT FILES, MATERIALS STANDARDS RECORDS AND FACILITIES DESIGN INFORMATION BELONGING TO THE DOE OR ITS CONTRACTORS.

- CURRENT AND PROPOSED MECHANISMS FOR DETERMINING EPIDEMIOLOGIC DATA RELEASE POLICIES INCLUDING CONTROLS ON "RAW" DATA, "WORK IN PROGRESS," AND COMPLETED ANALYSIS.

- CURRENT AND PROPOSED MECHANISMS FOR THE STORAGE OF DOE EPIDEMIOLOGIC DATA, INCLUDING THE ESTABLISHMENT OF A COMPREHENSIVE DATA REPOSITORY.

- DOE'S RESPONSE TO THE DATA RELATED REQUEST OF THE THREE MILE ISLAND PUBLIC HEALTH FUND.

- THE LONG-TERM ROLE OF THE NATIONAL ACADEMY OF SCIENCES "COMMITTEE ON RADIATION AND EPIDEMIOLOGICAL RESEARCH PROGRAMS."

IT IS MY INTENTION TO USE THE WORK OF THE COMMITTEE AS THE BASIS FOR A SIGNIFICANT REORGANIZATION OF OUR EPIDEMIOLOGY PROGRAM. I HAVE BEEN REVIEWING A LIST OF POTENTIAL COMMITTEE MEMBERS AND I AM IMPRESSED WITH THEIR QUALIFICATIONS. I AM LOOKING AT AN APPLICANT POOL THAT CONSISTS OF STATE HEALTH DIRECTORS, DISTINGUISHED MEMBERS OF THE ACADEMIC COMMUNITY AND OTHER REPRESENTATIVES OF BOTH PUBLIC AND PRIVATE INTERESTS. I WILL ANNOUNCE THE FULL MEMBERSHIP OF THIS COMMITTEE BY THE END OF NEXT WEEK.

I HAVE REQUESTED THAT THIS COMMITTEE PROCEED ON AN EXPEDITED BASIS. I EXPECT THAT THEY WILL CONDUCT THEIR FIRST MEETING JUST AFTER LABOR DAY. TO MAKE THEIR WORK RELEVANT TO THE BUDGET PROCESS, I WILL REQUEST AN INTERIM REPORT THAT ADDRESSES BUDGET AND STAFFING MATTERS BY NOVEMBER 1. I EXPECT A FINAL REPORT THAT ADDRESSES THE REST OF OUR EPIDEMIOLOGICAL RESEARCH ACTIVITIES BY MARCH 15, 1990. WHEN IT IS COMPLETED, I WILL SEND A COPY OF THIS REPORT TO THIS AND OTHER INTERESTED COMMITTEES OF CONGRESS SO THAT YOU CAN REVIEW IT FOR YOURSELF.

I AM PLEASED THAT KRISTINE GEBBIE, ADMINISTRATOR OF THE OREGON HEALTH DIVISION, AND ONE OF THE MOST RESPECTED INDIVIDUALS IN THE PUBLIC HEALTH COMMUNITY TODAY, HAS AGREED TO CHAIR THIS COMMITTEE. KRIS AND I HAVE WORKED TOGETHER BEFORE, AND I AM CERTAIN THAT SHE WILL LEAD THE TYPE OF THOROUGH AND INDEPENDENT EVALUATION THAT I NEED IN ORDER TO APPROPRIATELY RESTRUCTURE THE PROGRAM.

SECOND, AT MY REQUEST, THE NATIONAL ACADEMY OF SCIENCES, AS OF JUNE 1, 1989, HAS ESTABLISHED A STANDING COMMITTEE ON "RADIATION EPIDEMIOLOGIC RESEARCH PROGRAMS' TO PROVIDE THE DEPARTMENT WITH INDEPENDENT SCIENTIFIC ADVICE. THIS NAS PANEL IS DISTINCTLY DIFFERENT FROM THE SPECIAL ADVISORY COMMITTEE I JUST MENTIONED. WHILE THE ADVISORY COMMITTEE WILL FOCUS ITS ATTENTION ON POLICY ISSUES SUCH AS THE PROGRAMS STAFFING REQUIREMENTS AND ITS ORGANIZATIONAL STRUCTURE, THE NAS COMMITTEE HAS BEEN FORMED TO PROVIDE THE EPIDEMIOLOGY PROGRAM DIRECTLY WITH SCIENTIFIC ADVICE, A SORT OF ON-GOING PEER REVIEW, REGARDING THE BEST MEANS OF CONDUCTING QUALITY EPIDEMIOLOGIC RESEARCH. THE NAS HAS APPOINTED MEMBERS TO THIS COMMITTEE AND THEY ARE SCHEDULED TO HOLD THEIR FIRST MEETING ON THE 18TH AND 19TH OF SEPTEMBER.

THIS STANDING COMMITTEE HAS FOUR PRIMARY FUNCTIONS. IT WILL ADVISE DOE ON THE STATUS OF ITS EPIDEMIOLOGY PROGRAM WITH PARTICULAR ATTENTION TO ITS CURRENT STATUS AND FUTURE DIRECTION.

IT WILL ADVISE US ON THE CREATION OF A COMPREHENSIVE EPIDEMIOLOGIC DATA REPOSITORY. IT WILL ASSIST US IN DEVELOPING PROTOCOLS FOR THE USE OF SUCH A REPOSITORY ONCE IT IS OPERATIONAL AND IT WILL REVIEW AND EVALUATE INDEPENDENT RESEARCH PROPOSALS.

THIRD, I AM COMMITTED TO THE ESTABLISHMENT OF A COMPREHENSIVE EPIDEMIOLOGIC DATA REPOSITORY (CEDR) THAT WILL BE USED FOR THE STORAGE, IN A COMPUTERIZED FORMAT, OF ALL EPIDEMIOLOGICALLY RELEVANT INFORMATION ON APPROXIMATELY 600,000 PRESENT AND FORMER DOE CONTRACT EMPLOYEES. THE PURPOSE OF THE REPOSITORY IS TO PROVIDE ANY QUALIFIED RESEARCHER, AS DETERMINED BY THE PROTOCOLS ESTABLISHED BY THE NATIONAL ACADEMY OF SCIENCES, EASY ACCESS TO DOE'S EPIDEMIOLOGIC DATA. NO SUCH REPOSITORY EXISTS TODAY. THIS WILL BE A DIFFICULT TASK AS IT INVOLVES THE COMPILATION AND EXAMINATION OF MILLIONS OF INDIVIDUAL DOCUMENTS, BUT IT IS A PROJECT THAT MUST BE UNDERTAKEN. CURRENT PLANS CALL FOR THE COMPLETION OF THIS REPOSITORY BY THE END OF FY 1995 AT A TOTAL COST OF $36 MILLION.

FOURTH, REALIZING THAT THE COMPLETION OF THE REPOSITORY WILL TAKE AT LEAST SIX YEARS, THE DEPARTMENT IS WORKING WITH THE NATIONAL ACADEMY OF SCIENCES COMMITTEE TO DEVELOP CRITERIA THAT WILL ALLOW INDEPENDENT RESEARCHERS ACCESS TO THE SAME RAW DATA THAT DOE CONTRACT SCIENTISTS NOW USE TO CONDUCT THEIR STUDIES.

THERE HAS BEEN SOME CONFUSION ABOUT THIS POINT AND I WANT TO MAKE

IT CLEAR. THE NAS COMMITTEE, NOT DOE, WILL BE THE BODY THAT DETERMINES WHO IS AND IS NOT A QUALIFIED RESEARCHER AND WHETHER OR NOT THE METHODOLOGY THAT IS PROPOSED IS SCIENTIFICALLY SOUND. ONCE THE NAS COMMITTEE HAS DETERMINED THAT BOTH A RESEARCHER AND HIS OR HER PROPOSED STUDY MEETS ITS CRITERIA, ACCESS TO THE RAW DATA WILL BE GRANTED. I WILL NOT ALLOW EITHER INSTITUTIONAL OR IDEOLOGICAL AFFILIATION TO ENTER INTO THIS PROCESS.

IT SHOULD BE NOTED THAT THE CREATION OF THE DATA REPOSITORY WILL SIGNIFICANTLY EASE THE BURDEN OF RAW DATA COLLECTION AND ASSEMBLY, WHICH IS ONE OF THE REASONS THAT THE REPOSITORY IS SO IMPORTANT.

I AM COMMITTED TO ESTABLISHING A STATE-OF-THE-ART EPIDEMIOLOGIC RESEARCH PROGRAM. THE CREATION AND OPERATION OF SUCH A PROGRAM IS THE ONLY RESPONSIBLE COURSE OF ACTION IF DOE IS TO EFFECTIVELY PROTECT THE HEALTH AND SAFETY OF ITS EMPLOYEES AND THE PUBLIC AT LARGE.

MR. CHAIRMAN, AT THIS TIME I WOULD LIKE TO ADDRESS DOE'S USE OF THE CHELATING AGENT, DIETHYLENETRIAMINEPENTAACETIC ACID (DTPA), AS I KNOW THAT THIS IS A PARTICULAR CONCERN OF YOURS. THE DEPARTMENT IS INVOLVED IN FOOD AND DRUG ADMINISTRATION (FDA) APPROVED INVESTIGATIONAL NEW DRUG (IND) USE OF DTPA FOR THE TREATMENT (ONLY) OF PEOPLE, INCLUDING DOE CONTRACT EMPLOYEES, WHO HAVE BEEN ACCIDENTALLY EXPOSED TO INTERNAL DEPOSITIONS OF

PLUTONIUM OR OTHER TRANSURANIC HEAVY METALS.

DTPA IS ADMINISTERED IN A MEDICALLY PROFESSIONAL AND ETHICAL MANNER WITH THE FULL KNOWLEDGE AND CONSENT OF THE PATIENTS AND IT IS ADMINISTERED ONLY UNDER PROTOCOLS THAT HAVE BEEN APPROVED BY THE FDA. THE USE OF DTPA FOR TREATMENT OF ACCIDENTAL INTERNAL RADIATION EXPOSURES IS ONE ASPECT OF THE DEPARTMENT'S RADIATION EMERGENCY ASSISTANCE CENTER/TRAINING SITE (REAC/TS) WHICH IS OPERATED BY OAK RIDGE ASSOCIATED UNIVERSITIES. THE REAC/TS PROGRAM IS UNIQUE IN THE COUNTRY AND, IN FACT, HAS BEEN DESIGNATED BY THE WORLD HEALTH ORGANIZATION AS A COLLABORATING CENTER FOR RADIATION EMERGENCY ASSISTANCE.

MR. CHAIRMAN, REGARDING THE DOSE RECONSTRUCTION STUDIES, LET ME SUMMARIZE OUR ACTIVITIES AT HANFORD OPERATIONS, RICHLAND, WASHINGTON; AND AT THE FEED MATERIALS PRODUCTION CENTER (FMPC), FERNALD, OHIO.

AT HANFORD, IN RESPONSE TO HEALTH CONCERNS RAISED BY THE PUBLIC IN THE FALL OF 1985, DOE ASSEMBLED 300 DOCUMENTS ADDRESSING VARIOUS ENVIRONMENTAL IMPACTS FROM HANFORD OPERATIONS FOR THE PERIOD 1945 TO 1985. THESE DOCUMENTS WERE RELEASED FOR PUBLIC REVIEW IN FEBRUARY 1986. AN ADDITIONAL 418 DOCUMENTS WERE RELEASED IN APRIL 1987, FOR A TOTAL OF OVER 39,000 PAGES OF MATERIAL. FOUR HUNDRED AND FIFTY TWO OF THE 718 DOCUMENTS WERE PUBLICLY AVAILABLE PRIOR TO 1984. ONLY 36 OF THE REMAINING

DOCUMENTS HAD TO BE DECLASSIFIED FOR THE RELEASE.

FOLLOWING THE RELEASE OF THE DOCUMENTS AND AT THE REQUEST OF DOE, A HANFORD HISTORICAL DOCUMENTS REVIEW COMMITTEE WAS FORMED BY THE GOVERNORS OF WASHINGTON AND OREGON IN MARCH 1986 TO REVIEW THIS INFORMATION. THE HANFORD HISTORICAL DOCUMENTS REVIEW COMMITTEE, WHICH WAS COMPRISED OF REPRESENTATIVES FROM THE STATES OF WASHINGTON AND OREGON, THE YAKIMA INDIAN NATION, THE CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION, AND THE NEZ PERCE TRIBE, CONCLUDED THAT POTENTIAL RADIATION DOSES TO THE PUBLIC SHOULD BE RECONSTRUCTED.

IN A RELATED BUT SEPARATE ACTION, THE WASHINGTON STATE NUCLEAR WASTE BOARD AND THE INDIAN HEALTH SERVICE REQUESTED THE CENTERS FOR DISEASE CONTROL (CDC) TO CONVENE A PANEL OF EXPERTS TO REVIEW EPIDEMIOLOGICAL AND ENVIRONMENTAL DATA ASSOCIATED WITH 40 YEARS OF HANFORD OPERATIONS. THIS REVIEW, WHICH WAS CONDUCTED IN 1986 BY THE HANFORD HEALTH EFFECTS REVIEW PANEL, LIKEWISE IDENTIFIED DOSE RECONSTRUCTION AS A HIGH PRIORITY.

DURING 1987, DOE'S RICHLAND OPERATIONS OFFICE WORKED OUT THE ARRANGEMENTS FOR A DOSE RECONSTRUCTION PROJECT WITH THE HANFORD HISTORICAL DOCUMENTS REVIEW COMMITTEE. A KEY FEATURE FOR PROVIDING CREDIBILITY AND OBJECTIVITY TO THE PROJECT WAS THE FORMATION OF A TECHNICAL STEERING PANEL TO PROVIDE INDEPENDENT TECHNICAL DIRECTION TO THE CONTRACTOR DOING THE WORK, BATTELLE'S

PACIFIC NORTHWEST LABORATORY. THIS PROJECT IS CALLED THE HANFORD DOSE RECONSTRUCTION PROJECT AND THE PANEL IS CALLED THE TECHNICAL STEERING PANEL. WE HAVE TWO PRIMARY OBJECTIVES IN THE CONDUCT OF THIS WORK, ONE IS TO PRODUCE THE BEST TECHNICAL ESTIMATE OF THE DOSES AND THE SECOND IS TO ASSURE THAT THE RESULTS ARE CREDIBLE TO THE PUBLIC.

TECHNICAL STEERING PANEL MEMBERS WERE SELECTED IN MARCH 1988 BY A PANEL OF UNIVERSITY PROFESSORS APPOINTED BY THE DEANS OF RESEARCH FROM THE UNIVERSITY OF WASHINGTON, UNIVERSITY OF OREGON, OREGON STATE UNIVERSITY AND WASHINGTON STATE UNIVERSITY. THE SELECTION WAS MADE FROM A LIST OF OVER 100 CANDIDATES WHO WERE IDENTIFIED BY A PUBLIC SOLICITATION PROCESS. THE TECHNICAL STEERING PANEL HAS 18 MEMBERS AND INCLUDES REPRESENTATIVES FROM THE STATES OF WASHINGTON AND OREGON, SEVERAL INDIAN TRIBES, AND MEMBERS OF THE PUBLIC AT LARGE.

THE OBJECTIVES OF THE HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT ARE TO ESTIMATE THE RADIATION DOSES THAT POPULATIONS COULD HAVE RECEIVED FROM NUCLEAR OPERATIONS AT HANFORD SINCE 1944, AND TO MAKE PUBLIC ALL OF THE INFORMATION USED IN THE PROJECT.

IN ORDER TO OBTAIN DOSE ESTIMATES FROM PAST RADIOACTIVE RELEASES, BATTELLE IS IDENTIFYING, REVIEWING, AND ANALYZING HISTORICAL DATA TO RECONSTRUCT ATMOSPHERIC, RIVER, AND GROUND-WATER CONDITIONS

THAT AFFECTED THE TRANSPORT OF RADIOACTIVITY FROM OPERATING FACILITIES TO OFFSITE POPULATIONS. BATTELLE IS ALSO RECONSTRUCTING THE TYPES AND QUANTITIES OF RADIOACTIVE MATERIALS RELEASED TO THE ATMOSPHERE, COLUMBIA RIVER, AND SOILS. AS INFORMATION ON POPULATION DISTRIBUTIONS, AGRICULTURAL PRACTICES, AND FOOD HABITS IS OBTAINED, MODELING OF THE RADIONUCLIDES THROUGH ALL ENVIRONMENTAL PATHWAYS TO OFFSITE POPULATIONS WILL PROCEED.

TO EXECUTE THESE ACTIVITIES, BATTELLE DEVELOPED A WORK PLAN FOR THE PROJECT WHICH WAS APPROVED BY THE TSP IN SEPTEMBER 1988. THE PROJECT WORK PLAN INCLUDES THE FOLLOWING MAJOR TECHNICAL TASKS: SOURCE TERMS; ENVIRONMENTAL TRANSPORT; ENVIRONMENTAL MONITORING DATA; DEMOGRAPHICS, AGRICULTURE, AND FOOD HABITS; AND ENVIRONMENTAL PATHWAYS AND DOSE ESTIMATES.

OTHER TASKS ASSOCIATED WITH THE PROJECT INCLUDE QUALITY ASSURANCE AND SENSITIVITY AND UNCERTAINTY ANALYSES. THE SENSITIVITY ANALYSES WILL IDENTIFY WHICH DATA IS MOST IMPORTANT TO DOSE CALCULATIONS. THE UNCERTAINTY ANALYSES WILL HELP APPROXIMATE THE MAGNITUDE OF POTENTIAL ERRORS IN CALCULATIONS.

ALL PROJECT REPORTS WHICH HAVE BEEN APPROVED BY THE TECHNICAL STEERING PANEL, AND REFERENCES USED IN THE REPORTS, ARE PLACED IN THE PUBLIC READING ROOM LOCATED AT THE FEDERAL BUILDING IN RICHLAND, WASHINGTON. TECHNICAL PROGRESS OF THE PROJECT IS

REPORTED MONTHLY TO THE TECHNICAL STEERING PANEL BY BATTELLE. COPIES OF THESE REPORTS ARE ALSO PLACED IN THE PUBLIC READING ROOM. THESE REPORTS ARE ALSO AVAILABLE FROM THE NATIONAL TECHNICAL INFORMATION SERVICE. IN ADDITION, ANY PUBLIC INFORMATION RELEASED BY THE TECHNICAL STEERING PANEL IS PLACED IN THE PUBLIC READING ROOM.

THE QUALITY ASSURANCE PLAN DETAILS SPECIFIC MECHANISMS TO ENSURE THAT THE PROJECT COMPLIES WITH ALL QUALITY ASSURANCE REQUIREMENTS ESTABLISHED BY BATTELLE AND REVIEWED AND APPROVED BY THE TECHNICAL STEERING PANEL. THE PLAN IS BASED ON AMERICAN NATIONAL STANDARD INSTITUTE REQUIREMENTS. PERIODIC COMPLIANCE MONITORING BY THE QUALITY ASSURANCE TASK MEMBERS WILL VERIFY IMPLEMENTATION OF SPECIFIC QUALITY ASSURANCE REQUIREMENTS.

BASED ON A DIRECTIVE FROM THE TECHNICAL STEERING PANEL TO BATTELLE, THE PROJECT WILL CONSIST OF FOUR PHASES. PHASE I ENCOMPASSES A STUDY AREA WITHIN A RADIUS OF 100-150 KILOMETERS CENTERED ON THE HANFORD SITE AND IS SCHEDULED FOR COMPLETION BY APRIL 1990. PHASE I IS DESIGNED TO TEST THE COMPUTER MODELS AND OTHER SYSTEMS USED IN THE DOSE RECONSTRUCTION PROCESS. VERY PRELIMINARY DOSE ESTIMATES WILL BE CALCULATED DURING THIS MODEL TESTING PROCESS.

PHASE I COVERS THE YEARS 1944 THROUGH 1947 FOR THE ATMOSPHERIC PATHWAY, A PERIOD OF HIGHEST RELEASES OF IODINE-131 TO THE

ATMOSPHERE. PHASE I ALSO ADDRESSES THE YEARS 1964 THROUGH 1966 FOR THE WATER PATHWAY, A PERIOD OF RELATIVELY HIGH RELEASES AND EXTENSIVE MONITORING DATA. PHASES II, III, AND IV WILL BE BASED ON THE INFORMATION OBTAINED DURING PHASE I. THE TOTAL DOSE FROM ALL PATHWAYS IS EXPECTED TO BE COMPLETED BY 1993.

THE TOTAL ESTIMATED COST OF THE PROJECT IS APPROXIMATELY TWENTY MILLION DOLLARS DISTRIBUTED OVER A SIX YEAR PERIOD. FUNDING FOR THE PROJECT IN FISCAL YEAR 1989 IS THREE AND A HALF MILLION DOLLARS.

CDC HAS RECEIVED CONGRESSIONAL AUTHORITY TO CONDUCT AN EPIDEMIOLOGICAL STUDY OF THYROID MORBIDITY IN POPULATIONS DOWNWIND OF HANFORD. THE STUDY IS EXPECTED TO LAST FOUR YEARS AND COST APPROXIMATELY SIX MILLION DOLLARS.

THE CENTERS FOR DISEASE CONTROL WILL FIRST DETERMINE IF A FULL EPIDEMIOLOGICAL STUDY IS FEASIBLE. THIS WILL BE ACCOMPLISHED WITH BATTELLE CALCULATING DOSE ESTIMATES FOR A COHORT OF 300 TO 500 PEOPLE, WHO WERE 0 TO 19 YEARS OF AGE AND LIVED NEAR HANFORD DURING THE 1945 THROUGH 1949 TIME PERIOD. BY OCTOBER 1990, A PRELIMINARY ESTIMATE FOR THE FEASIBILITY OF A FULL THYROID MORBIDITY EPIDEMIOLOGICAL STUDY WILL BE REPORTED. IF A COMPLETE STUDY IS FEASIBLE, IT SHOULD BE COMPLETED BY THE END OF FISCAL YEAR 1993.

IN EARLY MAY 1989, WE RELEASED THE DECLASSIFIED DOCUMENT "DISSOLVING OF TWENTY DAY METAL AT HANFORD, HW 17381" COMMONLY REFERRED TO AS THE GREEN RUN REPORT. THIS REPORT DESCRIBES THE ENVIRONMENTAL MONITORING ASSOCIATED WITH THE DECEMBER 2, 1949 EXPERIMENT. EARLIER ESTIMATES BASED ON CALCULATIONS INDICATED APPROXIMATELY 4,000 TO 5,000 CURIES OF IODINE-131 WERE RELEASED FROM THE SEPARATIONS AREA. WHEN THE DOCUMENT WAS MADE PUBLIC TWO ADDITIONAL ESTIMATES OF RELEASES WERE FOUND BASED ON ACTUAL MEASUREMENTS, 60 AND 7780 CURIES OF IODINE-131. THE TECHNICAL STEERING PANEL DIRECTED THAT THE SOURCE TERM ASSOCIATED WITH THE GREEN RUN BE ADDRESSED IN PHASE II.

I AM EXTREMELY SENSITIVE TO THE HEALTH CONCERNS OF THE NEIGHBORS OF DOE FACILITIES. WE HAVE AN OBLIGATION TO DETERMINE IF THEY WERE IMPACTED BY OUR OPERATIONS. CONSIDERABLE FUNDS AND EFFORT HAVE BEEN PUT INTO ASSURING THAT THE HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT PRODUCES HIGHLY CREDIBLE TECHNICAL RESULTS AND WILL RESULT IN THE EARLIEST POSSIBLE RELEASE OF INFORMATION TO THE PUBLIC BECAUSE THEY DESERVE NO LESS THAN THE BEST.

WITH REGARD TO THE DOSE RECONSTRUCTION STUDIES AT FERNALD, SENATOR GLENN REQUESTED A STUDY IN APRIL 1985, FROM CDC TO DETERMINE IF AN OFF-SITE EPIDEMIOLOGICAL STUDY WAS APPROPRIATE FOR THE AREA IN THE VICINITY OF FMPC. THE LACK OF ADEQUATE HISTORICAL MONITORING DATA HAS REQUIRED THAT ESTIMATES BE BASED ON THE BEST DATA AVAILABLE AT THE TIME OF THE ESTIMATES.

ON JUNE 24, 1985, THE "REPORT ON HISTORIC URANIUM RELEASES FROM CURRENT DOE, OAK RIDGE OPERATIONS OFFICE FACILITIES" WAS ISSUED. IT WAS REPORTED THAT BETWEEN 1952 AND 1984, ABOUT 95,000 KILOGRAMS (KgU) OF URANIUM WERE DISCHARGED FROM FMPC TO THE AIR, AND ABOUT 74,000 KgU WERE DISCHARGED TO THE WATER. IN ADDITION, ABOUT 5,000,000 KgU WERE DISPOSED OF IN ON-SITE PITS. FMPC-ESTIMATED DOSES WERE NOT CALCULATED AT THE TIME DUE TO THE NEED FOR ADDITIONAL DATA COLLECTION AND IMPROVED CALCULATION ASSUMPTIONS.

A FURTHER EFFORT WAS UNDERTAKEN TO REFINE THE HISTORIC RELEASE DATA, WHICH RESULTED IN THE REPORT, "HISTORY OF FMPC RADIONUCLIDE DISCHARGES, NOVEMBER 1985". THE REPORT INCLUDES POINT SOURCE INFORMATION RATHER THAN INFORMATION ON THE ENTIRE PLANT. THIS REPORT WAS PROVIDED TO THE STATE OF OHIO, U.S. EPA IN CHICAGO AND WASHINGTON, AND THE CDC, ALONG WITH OTHER DOSE CALCULATION ASSUMPTIONS, SO THAT THE CALCULATIONAL RESULTS WOULD BE CONSISTENT WITH THOSE OF THE OTHER AGENCIES. A MEETING TO DISCUSS THE AGENCY REVIEWS OF THIS REPORT WAS HELD MAY 28, 1986. IT WAS DETERMINED THAT FURTHER DOCUMENTATION WOULD BE NEEDED TO ASSURE THAT THE BEST RADIONUCLIDE RELEASE DATA ARE USED IN THE CALCULATIONS. IMPROVED RADIONUCLIDE RELEASE DATA WAS REPORTED IN FMPC-2082, "HISTORY OF FMPC RADIONUCLIDE DISCHARGES", ISSUED IN MAY 1987. THIS REPORT INCORPORATED COMMENTS OF BOTH THE EPA AND THE CDC. A DOSE ASSESSMENT WAS PERFORMED USING THESE DATA AND A

REPORT ISSUED IN JUNE 1988.

AS STATED IN TESTIMONY BEFORE THE HOUSE SUBCOMMITTEE ON TRANSPORTATION, TOURISM, AND HAZARDOUS MATERIALS ON OCTOBER 14, 1988, IT WAS DISCOVERED THAT A POSSIBLE ADDITIONAL 20,000 TO 30,000 KILOGRAMS OF URANIUM HAD BEEN RELEASED FROM FMPC PLANT 2/3 UO_3 GULPING SYSTEM, OVER ITS 37-YEAR OPERATING LIFE. THIS ESTIMATE WAS BASED ON PRELIMINARY DOE INVESTIGATION RESULTS OF THE PLANT 2/3 UO_3 GULPING INCIDENT WHICH OCCURRED IN JUNE 1988. THIS INCIDENT INVOLVED AIR EMISSIONS FROM AN UNMONITORED STACK. A DOE INVESTIGATION OF THIS INCIDENT WAS INITIATED ON AUGUST 3, 1988, AND THE FINAL REPORT, "INVESTIGATION REPORT ON PLANT 2/3 GULPING EMISSION AT THE FEED MATERIAL PRODUCTION CENTER, JUNE 1988," WAS ISSUED IN JANUARY 1989.

AS A RESULT OF THE PLANT 2/3 INCIDENT, FMPC UNDERTOOK A COMPREHENSIVE STUDY OF HISTORIC FMPC OPERATION AND THE QUALITY OF PREVIOUS ESTIMATES. DOE PREPARED A REVISED AND COMPREHENSIVE HISTORIC RADIONUCLIDE EMISSIONS REPORT, "ADDENDUM TO FMPC-2082", AND TRANSMITTED IT TO THE CDC IN MARCH 1989. AT THE SAME TIME THESE DATA WERE USED TO PREPARE A DOSE ASSESSMENT AND A DRAFT REPORT WAS ISSUED ALSO IN MARCH 1989.

THE METHODOLOGY USED FOR THE ASSESSMENT WAS REVIEWED BY A COMMITTEE OF PEERS AND COMMENTS HAVE BEEN INCORPORATED. THE METHODOLOGY USES CONSERVATIVE DOSE CALCULATION PARAMETERS BASED

ON THE MOST RECENT AIR EMISSIONS ESTIMATES. THE COMPREHENSIVE EMISSIONS STUDY HAS INCLUDED A REVIEW OF ALL CURRENT AND PAST URANIUM AND THORIUM OPERATIONS AND INCLUDES STUDIES FOR EXISTING, ABANDONED, OR PREVIOUSLY DISCONTINUED PROCESSES. THE FINAL REPORT WILL BE ISSUED IN AUGUST 1989 AND PROVIDED TO THE CDC AS AN INPUT TO THEIR DECISION REGARDING AN EPIDEMIOLOGICAL STUDY OF FERNALD AREA RESIDENTS.

THE ORIGINAL ESTIMATE OF 20,000 - 30,000 KgU STATED IN THE OCTOBER 1988 TESTIMONY BEFORE THE HOUSE SUBCOMMITTEE ON TRANSPORTATION, TOURISM, AND HAZARDOUS MATERIALS HAS BEEN INCREASED TO A TOTAL OF AN ADDITIONAL 38,510 KgU FROM THE UO_3 GULPING SYSTEM. THIS INCREASE, ALONG WITH THE ADDITION OF ESTIMATED EMISSIONS FROM NON-ROUTINE EVENTS AND OTHER UNMONITORED PROCESSES, RESULTS IN TOTAL URANIUM EMISSIONS TO AIR OF 179,058 KgU, AS REPORTED TO THE "ADDENDUM TO FMPC-2082." THIS TOTAL MAY BE COMPARED TO THE EARLIER ESTIMATE OF 135,473 KgU GIVEN IN FMPC-2082. IN ADDITION, A THOROUGH REVIEW OF PAST OPERATIONS INDICATES THORIUM RELEASES ABOVE PUBLISHED ESTIMATES IN MAY 1987. THE ADDENDUM TO FMPC-2082 ESTIMATES THORIUM AIR EMISSIONS OF 6,495 KG FROM 1951 THROUGH 1987.

UNFORTUNATELY, THE LACK OF ADEQUATE HISTORICAL MONITORING DATA WILL REQUIRE THAT THE EMISSIONS CONTINUE TO BE CHARACTERIZED AS ESTIMATES. THE INDEPENDENT PEER REVIEW OF THE REVISED DATA SHOULD PROVIDE REASONABLE ASSURANCE THAT THE ESTIMATES ARE

APPROPRIATE FOR USE IN FMPC DOSE ASSESSMENT. CDC HAS ESTABLISHED AN INDEPENDENT PEER GROUP TO REVIEW THE ESTIMATES AND METHODOLOGY TO OBTAIN THE DATA. DOE HAS AGREED TO FUND THIS EFFORT AND IS COMMITTED TO ASSURING SUCCESSFUL COMPLETION OF THE DOSE RECONSTRUCTION STUDY. AS AGREED TO IN THE DOE-CDC MEMORANDUM OF AGREEMENT, CDC WILL PERFORM AN INDEPENDENT REVIEW OF THE FMPC HISTORICAL RELEASE DATA AND A DOSE/RISK ASSESSMENT. THE EFFORT WAS INITIATED IN JUNE 1989 AND IS EXPECTED TO TAKE 18 MONTHS TO COMPLETE.

REGARDING THE CLASSIFICATION OF WEAPONS-GRADE PLUTONIUM PRODUCTION INFORMATION AT THE HANFORD SITE, THE TECHNICAL STEERING PANEL OF THE HANFORD DOSE RECONSTRUCTION PROJECT HAS RECENTLY REQUESTED THAT DOE DECLASSIFY HANFORD SITE PRODUCTION INFORMATION TO ASSIST THE PROJECT'S PEER REVIEW AND PUBLIC ACCEPTANCE. SOME MEMBERS OF THE PANEL HAVE ACCESS TO CLASSIFIED INFORMATION, BUT IT IS BELIEVED THAT PUBLIC ACCEPTANCE WOULD BE HEIGHTENED BY THE REQUESTED DECLASSIFICATION.

I MET WITH DR. JOHN TILL, CHAIRMAN OF THE TECHNICAL STEERING PANEL TO DISCUSS HIS DECLASSIFICATION REQUEST AND ITS IMPORTANCE TO THE STUDY. HAVING CHAIRED MY OWN PANEL THAT WAS EXAMINING A COMPLEX ISSUE IN A PUBLIC SETTING, I AM EXTREMELY SENSITIVE TO DR. TILL'S DESIRE TO MAKE ALL SOURCE DOCUMENTS AVAILABLE TO THE PUBLIC AS A MEANS OF ENHANCING THE CREDIBILITY OF THE STUDY. I AM COMMITTED TO DECLASSIFYING AS MUCH INFORMATION AS POSSIBLE, AS

LONG AS IT WILL NOT TRULY HARM THE NATIONAL SECURITY INTERESTS OF THIS NATION.

THE PROTECTION OF PLUTONIUM PRODUCTION INFORMATION HAS BEEN ONE OF THE MOST FUNDAMENTAL COMPONENTS OF OUR CLASSIFICATION POLICY SINCE THE FIRST DAYS OF THE MANHATTAN ENGINEERING DISTRICT. CERTAINLY, IN THE POST WAR PERIOD, AND AS THE U.S. STOCKPILE WAS GROWING, THE QUANTITY OF PLUTONIUM PRODUCED WAS DIRECTLY RELATED TO THE NUMBER OF WEAPONS AND NEEDED TO BE CLASSIFIED AS SECRET RESTRICTED DATA FOR NATIONAL SECURITY PURPOSES. WEAPONS-GRADE PLUTONIUM PRODUCTION INFORMATION WOULD ACCURATELY PROVIDE A POTENTIAL ADVERSARY INFORMATION REGARDING U.S. NUCLEAR WEAPONS DEPLOYMENT CAPABILITIES AND ABILITIES TO INCREASE DEPLOYMENTS IN A PERIOD OF TENSION. AS THE WEAPONS STOCKPILE BECAME DIVERSIFIED, THE LINKAGE BETWEEN THE INVENTORY OF PLUTONIUM AND THE WEAPONS STOCKPILE HAS CHANGED, BUT THE RELATIONSHIP STILL EXISTS. THEREFORE, REVEALING THIS INFORMATION COULD BE INIMICAL TO THE U.S. NATIONAL SECURITY.

NEVERTHELESS, SINCE THIS INFORMATION HAS TRUE VALUE TO THE PUBLIC, IT IS TIME TO RECONSIDER CLASSIFICATION POLICY AND WE ARE UNDERTAKING A STUDY TO DETERMINE WHAT INFORMATION CAN BE DECLASSIFIED WITHOUT UNDUE RISK TO NATIONAL SECURITY. I WILL REVIEW THIS STUDY PERSONALLY. I WANT TO BE SURE THAT ITS CONCLUSIONS ARE BASED ON CURRENT THINKING THAT CONSIDERS ALL OF THE TECHNIQUES THAT ARE CURRENTLY USED TO ESTIMATE PRODUCTION

CAPABILITIES AND NOT JUST BASED ON SOME OUTMODED IDEOLOGY AND PRODUCTION ASSUMPTIONS.

MR. CHAIRMAN, YOU ALSO HAVE ASKED THAT I ADDRESS THE RESPONSIVENESS OF DOE TO RADIATION PROTECTION GUIDANCE PROPOSED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA).

THE DOE HAS A LONG HISTORY OF WORKING COOPERATIVELY WITH EPA IN ITS DEVELOPMENT OF RADIATION PROTECTION STANDARDS AND GUIDANCE FOR WORKERS, THE PUBLIC, AND THE ENVIRONMENT. ONCE EPA STANDARDS AND/OR GUIDANCE HAVE BEEN ESTABLISHED, DOE HAS PROCEEDED TO IMPLEMENT THEM THROUGH INTERNAL POLICY AND MANAGEMENT DIRECTIVES. ALL OF EPA'S STANDARD SETTING RULES THAT APPLY TO DOE ARE MANDATORY. COMPLIANCE BY DOE IS NO DIFFERENT THAN COMPLIANCE BY THE REST OF THE REGULATED COMMUNITY.

EXAMPLES WHERE DOE HAS WORKED COOPERATIVELY WITH EPA IN DEVELOPING RADIATION PROTECTION STANDARDS AND GUIDANCE INCLUDE:

- NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS) - RADIONUCLIDES - 40 CFR PART 61. DOE WORKED COOPERATIVELY WITH EPA IN THE DEVELOPMENT OF THIS RULE. DOE HAS REPORTED ANNUALLY ON OUR PERFORMANCE WHICH HAS BEEN WELL WITHIN THE REQUIRED STANDARD. WE HAVE COOPERATED WITH EPA IN ITS RECENT EFFORTS TO REVISE THIS STANDARD.

- RADIATION PROTECTION GUIDANCE TO FEDERAL AGENCIES FOR OCCUPATIONAL EXPOSURE - 52 FR 2822, 1/27/87. DOE PARTICIPATED IN THE INTERAGENCY WORKING GROUP THAT EPA ESTABLISHED TO DEVELOP THIS FEDERAL GUIDANCE ONCE. DOE WAS THE FIRST MAJOR FEDERAL AGENCY TO IMPLEMENT THE GUIDANCE (DOE ORDER 5480.11, RADIATION PROTECTION FOR OCCUPATIONAL WORKERS).

- HEALTH AND ENVIRONMENTAL PROTECTION STANDARDS FOR URANIUM AND THORIUM MILL TAILINGS - 40 CFR PART 192. DOE COOPERATED WITH EPA IN DEVELOPING THE STANDARDS AND HAS IMPLEMENTED THEM IN THE CONDUCT OF ITS REMEDIAL ACTION PROGRAMS AT SITES LOCATED AROUND THE COUNTRY.

- DOE HAS ALSO COOPERATED WITH EPA IN DEVELOPING STANDARDS FOR THE FOLLOWING ACTIVITIES NOW IN DIFFERENT STAGES OF DEVELOPMENT AND EXPECTS TO COMPLY FULLY WHEN STANDARDS ARE ISSUED BY EPA.

  - ENVIRONMENTAL RADIATION PROTECTION STANDARDS FOR MANAGEMENT AND DISPOSAL OF SPENT NUCLEAR FUEL, HIGH LEVEL AND TRANSURANIC WASTES - 40 CFR PART 191.

  - ENVIRONMENTAL STANDARDS FOR THE MANAGEMENT, STORAGE AND LAND DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTE AND NATURALLY OCCURRING AND ACCELERATOR PRODUCED WASTE - 40 CFR PART 193, 40 CFR PART 764.

FEDERAL RADIATION PROTECTION GUIDANCE FOR EXPOSURE OF THE GENERAL PUBLIC.

DEPARTMENT OF ENERGY

CHARTER

SECRETARIAL PANEL FOR THE EVALUATION OF EPIDEMIOLOGIC RESEARCH ACTIVITIES OF THE DEPARTMENT OF ENERGY

1. Committee's Official Designation:

   Secretarial Panel for the Evaluation of Epidemiologic Research Activities of the Department of Energy

2. Committee's Objectives and Scope of Activities and Duties:

   The Secretarial Panel for the Evaluation of Epidemiologic Research Activities of the Department of Energy (SPEERA) will provide to the Secretary an independent evaluation of the Department of Energy's (DOE) epidemiology program and the appropriateness, effectiveness, and overall quality of DOE's epidemiologic research activities.

   The SPEERA will examine the following aspects of DOE's epidemiologic research activities and recommend measures to the Secretary that will ensure that these activities are appropriate, effective, and represent excellence:

   a. The goals and objectives of the epidemiologic research program (the Program).

   b. The management and reporting structure of the Program.

   c. The full-time-equivalents (FTE's) and budget resources allocated to the Program (both internally to the DOE and externally to contractors).

   d. The use of contract scientists for ongoing and special projects.

   e. The quality control mechanisms in the Program, including data completeness and accuracy, and data management (archiving and access).

   f. The utility and feasibility of transferring the epidemiologic research function, including the necessary data, to another entity.

   g. Maintenance and access to related records such as exposure incident files, materials standards records and facilities design information belonging to the DOE or its contractors.

   h. Current and proposed mechanisms for determining epidemiologic data release policies including controls on "raw" data, "work in progress," and completed analysis.

i. Current and proposed mechanisms for the storage of DOE epidemiologic data, including the establishment of a comprehensive data repository.

j. DOE's response to the data related request of the Three Mile Island Public Health Fund.

k. The long term role of the National Academy of Sciences "Committee on Radiation and Epidemiological Research Programs."

l. Other areas related to the Program as determined.

3. Issuance of an Interim and a Final Report:

The Panel shall submit an interim and a final report to the Secretary of Energy.

4. Time Period Necessary for the Committee to Carry Out Its Purpose:

The Panel is expected to complete its purpose within 10 months.

5. Official to Whom This Committee Reports:

The Panel will report to the Secretary of Energy.

6. Agency Responsible for Providing Necessary Support for This Committee:

The Department of Energy shall provide the Panel with such administrative services, funds, facilities, staff, and other support services as may be necessary for the performance of its functions.

7. A Description of Duties for Which the Committee is Responsible:

The duties of the Panel are solely advisory and are fully stated in paragraph 2 above.

8. Estimated Annual Operating Costs in Dollars and Person-Years:

The estimated operating costs are $750,000 and 7.5 person-years. This estimate covers salaries for the support staff to the Panel; the salaries of any consultants, including Federal employees who may be detailed from another agency to assist the Panel; travel expenses; per diem in lieu of subsistence for panel members; supplies; facilities; and other services as may be necessary in support of the Panel's functions.

9. Estimated Number and Frequency of Committee Meetings:

The Panel is expected to meet approximately six (6) times, or as determined by the Secretary.

10. Committee's Termination Date (If Less Than Two Years From The Date of Establishment or Renewal):

    The Panel is expected to terminate no later than May 31, 1990.

11. Subcommittees:

    To facilitate the functioning of the Panel, subpanels may be formed. The objectives of the subpanels are to make recommendations to the SPEERA with respect to matters concerning the DOE plans and programs which are related to the objectives and scope of the SPEERA. The subpanels shall be comprised of such members of the SPEERA as may be determined by the Chairperson.

12. Members:

    Committee members shall be appointed by the Secretary of Energy. Members shall be distinguished individuals who have experience in the areas of public health, occupational health, epidemiology, research standards, ethical and legal aspects of medical research, organized labor, and other areas as necessary to achieve a fairly balanced membership. The approximate number of members is seven.

13. Chairperson:

    The Chairperson shall be appointed by the Secretary of Energy.

This Charter for the Advisory Committee named above is hereby approved on:

Date:______________________________

____
Howard H. Raiken
Advisory Committee Management Officer

Date Filed:________________________

89-31

TESTIMONY OF MARGARET SEMINARIO, ASSOCIATE DIRECTOR
DEPARTMENT OF OCCUPATIONAL SAFETY, HEALTH AND SOCIAL SECURITY
AMERICAN FEDERATION OF LABOR AND
CONGRESS OF INDUSTRIAL ORGANIZATIONS
BEFORE THE SENATE COMMITTEE ON GOVERNMENT AFFAIRS ON
WORKER SAFETY AND HEALTH AND
DEPARTMENT OF ENERGY NUCLEAR FACILITIES

August 3, 1989

Mr. Chairman, the AFL-CIO appreciates the opportunity to testify at these hearings on workers safety and health at Department of Energy (DOE) nuclear facilities. AFL-CIO unions represent most of the workers employed at these facilities and the AFL-CIO has a long history of involvement in safety and health at DOE facilities. For more than three decades the federation and our affiliates have fought an uphill battle to highlight the problems in this industry.

As this Committee is well aware, conditions at many DOE nuclear facilities pose a serious threat to safety, health and the environment. Over the past four decades, radioactive releases and improper dumping of hazardous and radioactive wastes have exposed workers and the public to serious risks and have contaminated the environment. For workers, these problems have been compounded by antiquated facilities, poor engineering controls, inadequate protective equipment, lack of training and poor monitoring and surveillance.

Secrecy, lack of accountability and commitment and decentralized management are all major factors which have led to the current crises. Operations at DOE facilities have been shrouded in secrecy. The "production first" mentality established during World War II has continued with safety and environmental concerns given secondary attention.

Contractors have ignored safety rules with the complicity of DOE officials. Information documenting radioactive releases and poor safety practices has been withheld from the public and the extent of the hazards covered up by DOE. Fearing liability, neither DOE nor its contractors have conducted the proper studies to determine risks and adverse effects from exposure to workplace hazards.

For workers at DOE facilities, the safety and health problems are serious and extensive. Over 100,000 workers are currently employed in the DOE Nuclear Weapons complex. It is estimated that nearly 500,000 workers have been employed to do this work over the past 30 years. Exposure to radioactive releases is a serious problem but asbestos, beryllium and other toxic chemicals also threaten the health of these workers.

When the Occupational Safety and Health Act was enacted in 1970, DOE's nuclear facilities were exempted from its scope. DOE does adopt OSHA standards as its own regulations which contractors are obligated to follow. However, in practice contractor compliance and DOE enforcement has been lax. Contractors have been permitted to violate safety and health rules with the acquiescence of DOE officials. For example, in 1986, the contractor at the

Hanford, Washington facility failed to comply with the new OSHA asbestos standard which was incorporated into DOE regulations. Environmental monitoring and medical surveillance were not conducted as required by the standard. For nine months, DOE exempted the contractor from key provisions of the standard with no assurances that other steps were being taken to protect workers exposed to this deadly dust.

Just as DOE has failed to enforce safety and health standards, the department has also failed to conduct necessary research to evaluate potential adverse health effects among its worker populations. Though DOE is mandated to conduct research on radiation exposure, many occupational groups with known high exposures have not been studied. Where studies have been conducted, often the research methods have been flawed. Other studies which have indicated positive cancer outcomes have been terminated by DOE with the contracts given to less qualified researchers.

DOE has extensive evidence which documents high levels of radiation and toxic substance exposures among many nuclear and contract workers which put these workers at increased risk of cancer and other diseases. DOE has made no systematic efforts to notify current and former workers about their risks or to provide them the opportunity for medical surveillance for early detection of disease. Last year the DOE did announce a high risk notification program for workers exposed to beryllium, a highly toxic metal. It is unclear, however, that any progress has in fact been made to implement the notification program for these beryllium exposed workers.

The planned cleanup, shutdown or modernization of a number of DOE facilities in the next decade will create additional safety and health problems for many DOE workers. Workers assigned clean up responsibilities will face exposures to radioactive and toxic wastes. Plant shutdowns may cause tremendous worker dislocation and leave DOE workers without access to necessary medical care or employment opportunities. High risk workers may find it difficult to secure future employment, in effect black listed because of their past occupational exposures. For those workers who develop occupational diseases, state based workers' compensation systems are not likely to provide adequate coverage or support.

Immediate and far reaching Congressional action is needed to address these serious worker safety and health problems at DOE facilities. Legislation is needed both to address the problems created by DOE's past practices and to assure the fullest protection for workers in the future.

Responsibility for enforcing worker safety and health protection must be transferred to the Occupational Safety and Health Administration (OSHA) with the necessary funds and qualified personnel to do the job. OSHA is admittedly not as effective as the unions would like. But with specific legislation which also mandates the promulgation of standards, training and education and joint labor-management safety committees, the AFL-CIO believes safety and health at DOE facilities can be improved significantly.

Health and safety research should also be removed from DOE's jurisdiction. Over the years, DOE has failed to conduct scientifically sound unbiased research to evaluate potential risks from exposures. The responsibility for research should be shifted to the National Institute for Occupational Safety and Health and an independent board with worker representation established to oversee study designs and protocols. Access to DOE facilities and agency and contractors' records should be mandated and workers permitted to participate fully in all investigations and studies.

Many DOE workers are at increased risk of disease as a result of occupational exposure to radiation and other hazards. Notification and surveillance programs must be established for these workers for early detection and possible prevention of disease. DOE's announced plans to close several facilities increases the urgency to establish such a program before contact with current and former employees is lost.

Closing of facilities will have an additional impact on DOE nuclear workers. Retraining, job placement and economic assistance must be provided to lessen the burden on workers who may be displaced.

A federal compensation system must also be established for DOE workers who develop occupational diseases due to workplace exposures. The state based compensation systems which currently cover DOE workers do not provide adequate coverage for occupational diseases. DOE has announced plans to compensate members of the public who have suffered adverse health effects because of contamination from DOE facilities. Workers are even at greater risk of disease as a result of DOE's neglect and deserve similar compensation.

The cost of cleaning up DOE facilities and improving safety and health will be significant. Estimates range from $53 billion to $200 billion, but these estimates do not include the full range of worker safety and health measures proposed by the AFL-CIO. Similarly, DOE's recently announced plan to spend $17 billion over the next five years for clean up and modernization does not appear to cover key worker safety measures like notification and surveillance.

The AFL-CIO is hopeful that the continued vigilance of this Committee will spur the Congress and DOE to provide workers at DOE facilities the protections they need and deserve.

Thank you.

STATEMENT

of

ROBERT E. WAGES, VICE-PRESIDENT
Oil, Chemical and Atomic Workers International Union

I represent over 5,000 workers at Department of Energy installations throughout the United States. With me on this panel are representatives from other trade union organizations charged with the responsibility of representing atomic energy workers at DOE facilities. Collectively we represent over 10,000 workers who, up to now, have been voices in a vast bureaucratic wilderness of secrecy and neglect.

It is also fair to say that we are angry because the history of the Department of Energy's (and its predecessor agencies) self-regulation is one of denial, cover-up, inefficiency and betrayal -- betrayal to workers in the industry and betrayal to the communities in which these facilities operate. But let's make no mistake about it, matters of urgency have been brought to the attention of the United States Congress on prior occasions with little or no meaningful response. Only when the ugly record of DOE's environmental and public health failures became a public issue did this or any other political institution decide that the light should be shed on the subject.

We are going to make certain observations today with the hope that the workers in these facilities can be an integral part of the debate which must be carried out. We are participating here today to focus attention on the absolute necessity of implementing, eventually, legislative reform in regards to environmental and occupational safety and health oversight; we also expect this Committee and the Congress as a whole to understand the needs and expectations of thousands of atomic energy workers who have been participants in and victims of the military imperative of the Cold War and are now wondering: "What next?"

A bit of history will be instructive to the feelings of many workers in the industry. In 1970, at a meeting convened by OCAW in Salt Lake City, Utah a Local Union officer from the Idaho Falls, Idaho atomic energy site wrote:

> "We have a problem with disposing of our radioactive waste; this has been an extremely difficult problem for the Government, but they've gone about it in a real haphazard manner. We have one of the burial grounds in the Idaho Falls National Reactor Testing Station. The way that they dispose of their radioactive waste is, they take heavy equipment and they go out and they dig a big trench. They put the smaller particles in a pasteboard box and the rest of the stuff is dumped directly into the ground. This

> includes the material from the Colorado atomic plant. As you know, the Idaho Falls disposal burial ground is right over the nation's largest underground water supply, which handles water for the vast Northwest. We know that we have tanks of radioactive material, a liquid, that is leaking into the ground. Hanford has the same problem, and the same problem exists in other places. Legislation or some type of respective action is going to have to take place to protect people, the people's environment."

That Local Union official is here today and is OCAW's Legislative Director.

The allegations surrounding radioactive waste were not addressed just by OCAW on that day in 1970; allegations were made by representatives of the workers at Rocky Flats regarding the disposal of contaminated wastes in an unauthorized manner at that facility in the late 1960s and 1970.

Of particular note I refer the Committee to the Congressional Record, Friday, March 6, 1970 and the comments of Senator Frank Church under the heading: THE ATOM-ITS DANGEROUS AFTERMATH. PART II-ATOMIC WASTE PROBLEM DISCLOSED. I would urge the Committee to review the record of complaints and answers which is revealing about an attitude of the responsible agency which to this date has not changed. The attitude of which I speak concerns the arrogant attitude that the DOE knows best; it alone has the technical expertise; it alone has the public interest at heart; that the agency works cooperatively with other agencies on environmental issues. What strikes out at the reader, at least this reader, was the very valid questions being raised and the responses indicating a blind acceptance of agency positions. We knew, the Congress knew, the public knew or at least all of us were on notice of serious public health and/or worker exposure questions. The record of which I speak was created nineteen years ago.

The questions raised nineteen years ago include: radioactive contamination of ground water; plutonium contamination in off-site areas after a fire at the Rocky Flats facility; long-range dangers of radioactive waste storage; a discussion on waste disposal practices at the Idaho National Reactor Testing Station; the allegations of suppression of information (specifically the National Academy of Sciences report to the Atomic Energy Commission on the Geological Aspects of Radioactive Waste Disposal); the call by the Bureau of Radiological Health for certain reforms to be made in the handling of solid radioactive waste at the National Reactor Testing Station in Idaho (which took years to implement and arguably some never were). Of course years ago we started to weigh in with evidence on the physical hazards of ionizing radiation. We collectively debated what the permissible exposure standards ought to be. Somewhere, sometime in that process we neglected to undertake the kind of mortality and morbidity studies which would have produced the epidemiology to establish the risk factors for human beings exposed to ionizing radiation. I would submit to you that one of the reasons for this is the fact that the vast numbers of workers who would need to be followed work in DOE facilities where the operative mandate was and is production at whatever cost. . . secrecy in the national interest.

Are the questions today substantially different? Not really. There are more of them. The information on worker safety and health was slow in developing but develop it has and it is scary. Permit me then to be a bit more contemporary:

> -One of our Local Union leaders, a worker in the industry, recently told us that "...the industry is unique. We have all the usual industrial safety hazards, chemical exposures to carcinogens, and other toxic chemicals, hazardous waste and then the hazard of radiation."
>
> -Several of the facilities are literally built of asbestos; and long after the lethal qualities were accepted and we wait for remediation projects.
>
> -Lethal hydrogen fluoride gas is used at several facilities without any discussion on the safe transportation, storage and use in process of this toxic substance which at least has occurred in the other "public" industries in which it is used, most notable of which is the petroleum industry.
>
> -The use of beryllium in the atomic energy industry has created an epidemic of a condition known as berylliosis to those workers exposed to the metal.
>
> -One of our Local Union leaders, in lamenting DOE's constant propaganda that all is well, offered the following observation: "I keep preaching ALARA (the policy to keep radiation exposures As Low As Reasonably Achievable), but some guys think the 5 rem standard is a bank account to be filled. How can I motivate people when the DOE keeps telling them that crossing the street is more dangerous than the radiation?" This is particularly troublesome when there are moves afoot to increase allowable exposure to over 5 rem. Should the effort to increase allowable exposure succeed, you will find workers in the street. I guarantee it!
>
> -DOE will tell you that its self-imposed occupational health and safety standards are more stringent than the OSHA General Industry standards. Paper means nothing. The DOE and the contractors have not allowed the workers or their representatives the empowerment rights afforded workers in

the private sector and don't intend to. At one of our facilities today, the worker's safety and health committee is not recognized by the contractor. Accidents are investigated by the DOE and the contractor with no worker representative involved. At another facility, OCAW and an operating contractor fought for years on what health and safety data the Union was entitled to obtain upon request. The taxpayers paid for the contractor's unwillingness to disclose which was accomplished with DOE's blessing and understanding; yet the right of access to health and safety information in the representation of employees is a well settled proposition in the public sector.

-Worker input on environmental matters is also ignored by the DOE. Two of our own examples come to mind: in one case we argued to the contractor about the incinerator's emission and gas releases for years before anything was done. That particular incinerator was capable of releasing uranium hexafluoride. Just recently at another one of our facilities, a staff reduction done for so-called productivity reasons was grieved by the local union on the grounds that the operation could not be done safely with the staff reduction. The Local President told us: "We had a significant release because of the lack of personnel. The contractor told me that it only contaminated the roof and didn't get to the fence line. After the incident, the staffing level was increased."

OCAW along with other concerned trade union organizations has committed itself to an agenda of reform. We are deeply concerned about the health, safety and future of the workers in these facilities. We are also deeply concerned about the health, safety and future of the communities in which these plants operate.

If however we are to deal with the issues of worker safety and health, environmental safety and health, and the attendant public health issues then we are going to have to do it in the light of day and away from the secrecy of the past forty years. The workers I represent are nothing less than military veterans who deserve to be treated by their Government as participants in the military commitment to the development of atomic energy. We cannot reshape the moral decision to build or drop the nuclear bomb. We do expect to help shape a regulatory scheme which will serve the workers and their communities first and the appetite of the military and the Government second. We are committed to this process; we expect nothing more; we will accept nothing less.

Thank you for your attention and thoughtfulness to these remarks.

MICHAEL T. DAVIDSON, PRESIDENT
UNITED STEELWORKERS OF AMERICA
LOCAL UNION 8031

My name is Mike Davidson and I am President of United Steelworkers of America Local Union 8031. Our Local represents one half of the employees at the DOE Rocky Flats Facility. Our 2600 members are involved in production and maintenance at the Plant.

Mr. Chairman, I want to take this opportunity to thank-you for the privilege of addressing your committee and express my appreciation for the leadership and concern you have personally shown in regards to insuring the protection of workers at the DOE Nuclear Weapons facilities and for your support of total independent oversight at facilities such as Rocky Flats.

As with any industrial complex you are going to experience the necessity of working with hazardous materials, the obvious unique aspect of our facility is the additional hazard of radioactive substances.

We are continously attempting to reduce our exposures in the workplace through cooperative efforts with the contractor. The major problem we have encountered is a reluctance by DOE and its contractor to issue a timely action on correcting deficiencies. The Beryllium (Be) issue is a case in point where the contractor and the DOE knew for some time of the concerns of our Union relating to our members exposure to Be but were reluctant to implement effective controls to protect our members. The DOE's own OSHA type audits repeatedly noted this as an issue and yet, no enforcement of corrective action took place by the DOE. The biggest road block seemed to be the required additional cost of these safety enhancements such as a new ventilation system, totally enclosed gloveboxes and procedural changes in fabrication.

Ultimately the DOE and the contractor agreed to allow the National Institute of Occupational Safety and Health (NIOSH) to intercede and subsequently some protective measures were taken such as clean up of the Be contamination in the workplace and the issuance of full time respiratory protection. An added benefit resulted with the National Institute of Health (NIH) giving a one and a half million dollar grant to the National Jewish Center for Immunology and Respiratory Medicine in Denver. The grant is allowing the development of a validated screening test for Beryllium disease. The new test has already determined that 14 of our members do in fact have the disease of berylliosis. The test has therefore been invaluable in identifying persons to be removed from further Be exposure and those employees who with medical treatment, may lower the risk of subsequent impairment from this chronic disease.

The continuing down side of the ongoing Be issue at our Plant is that the DOE and the contractor have refused to implement any further corrective action in the workplace and continues to resist admittance of liability in most workers compensation cases. There has been little or no recent action on the DOE's proposal to implement a Beryllium notification program. The Union's at the DOE plants where Be work is performed should be kept fully informed as to the progress of this notification program. The goal of the program would be to notify dislocated workers who have subsequent to exposure to Be left the employ of the nuclear weapons facilities and are not being tracked for the possibility of Berylliosis. I believe this should be given a higher priority and the unions at the affected facilities should be actively involved in any implementation of this program. The reality is upon notification most members will turn to their Union first for information or assistance.

I believe the Be issue at our Plant is indicative of the absolute need for independent oversight of the DOE and its contractors to insure that health, safety and environment are always given first priority over production. It is one thing to recognize a health and safety problem, which we are usually able to do. The ongoing problem is that there is no one mandated in the Federal Government to force the DOE and its contractors at these nuclear weapons facilities to comply with corrective action and ultimately have enforcement penalty if they do not.

There is also a definite need for additional hazardous material training at our site. The area of non-radioactive hazardous material handling and control needs to be given a higher priority and competent instructors should be utilized. We are not currently receiving the OSHA mandated 24 hours of training at our Plant. This training should involve specific classroom time with ongoing retraining at periodic intervals.

There is also a very clear need for additional funding for clean-up and protective equipment at our Plant, such as a new Selective Alpha Air Monitoring System, a dedicated Neutron Criticality Detection System, state-of-the-art fire alarm system that meets current fire code standards and adequate funds for expeditious clean-up of the burial sites used at the Plant which are over 20 years old.

If I were to sum up what I believe would be the single biggest change which should be implemented at the DOE Nuclear Weapons facilities to insure health and safety of both workers and the public it would be total independent oversight. The cliches have almost become a household word, "the fox watching the henhouse; and the toothless watchdog to name a few".

If ever the time were ripe for getting this proposed legislation passed, it is now. No matter how ardently the DOE or its contractors of the nuclear weapons complex attempt to "clean up their act"in the areas of health and safety their credibility is forever going to be challenged. The recent Department of Justice investigation at Rocky Flats has once again inflamed the fears of the public and attracted the calls from some for the demise of the plant.

There are many justified arguments for the mandating of independent oversight such as improved safety and health, the enforcement of safety first, protection of workers, safeguarding of environment and higher priorities for adequate funding for health and safety, to name a few. The most recent reason is the one that may hold the most weight so far. These facilities have lost the confidence of the very people we are working to protect by our contribution to the nuclear arms deterrent of our national defense, the public of our country. The public perception, right or wrong, is that the DOE and its contractors no longer have their best interests in mind and feel they are being betrayed. The checks and balances required in our representative form of government are clearly lacking when it comes to the DOE doing their own oversight.

Whether its OSHA and NIOSH or a new independent agency of the federal government which is given the independent oversight authority, it can no longer be left up to the DOE.

The question should no longer be whether or not we need independent oversight. It should be how can we get it legislated in the most expediant way.

Thank you.

Testimony of

David Day

President

Fernald Atomic Trades and Labor Council

U.S. Department of Energy's

Feed Materials Production Center

Fernald, Ohio

before the

Committee on Governmental Affairs

United States Senate

AUGUST 2, 1989

Mr. Chairman and members of the Committees , Thank you for giving me this opportunity to speak here today. My Name is David Day. I am President of the Fernald Atomic Trades and Labor Council , a Council made up of 13 individual Local Unions working at the Westinghouse Materials Company of Ohio. The Council is affiliated with the Metal Trades and the AFL-CIO. I belong to the Machinists Union and have worked at Fernald for 10 years.

The DOE has operated the facility for approximately 38 years. During Representative Gaydos Hearings , I spoke on the secrecy that surrounds the DOE facility. I would like to add that testimony for the record today.

In preparing for todays testimony I talked to many workers that have been employed at Fernald for many years . All of the workers have nightmarish recollections of their years at Fernald. In my testimony I will share one of their stories.

I want to tell you about Floyd Grubbs. He started working at Fernald in 1955 as a laborer in transportation and belonged to the Teamsters Union. As a laborer , Floyd unloaded South African ore from box cars , that was later dumped in K-65 pits He helped dump 600,000 lbs. of uranium ingots in Pit one at the k-65 silos , using a flat bed truck, He Floyd was not told by his supervisor that these action could be dangerous to his health. He was never fitted for a respirator. In fact he was not told where there were any respirators available. He was never asked to attend a health and safety training session on any of the various materials that he worked with. When Floyd was upgraded to a fork lift operator he worked in many buildings and areas on the project. In plant five he was exposed to mag-fluoride , green salt and black oxide dusts. In plant 2/3 Floyd was exposed to acid boil overs that caused mists and fumes. Yellow cake from plant eight was put in a dump truck . Samples were taken from a bucket called "good sample" this material was then dumped in pit three at the k-65 area. Every truck load was improperly sampled. Floyd helped load thorium that was stored in various buildings on the project. Magnesium fluoride was dumped in pit six of the K-65 area using an old dump truck . The floor board was full of holes causing the mag-fluoride dust to fill the cab of the truck. There were many chip fires were in plant 6 , exposing the workers to the smoke. Today Floyd Grubbs is the only living transportation laborer alive that started employment in 1955.

The cloak of secrecy has been our biggest enemy at Fernald. Secrecy that has promoted ignorance and management practices that defy common sense and the law. The inability of the workers to call on outside safety and health experts added further to their unsafe practices. For instance, workers would walk around eating an apple or reach into a tobacco pouch with black oxide on their hands.!!

Ten years ago as an employee I was told that the materials that I was working with at Fernald had such a low level of radiation that the biggest problem was that it was like working with lead. There was no indication of the hazards of radiation. In fact, we were told the levels were too low to harm us. We were not told we were working around materials like Thorium and Plutonium. When entering the plant site, the work areas were so dirty that we never thought there was anything to be concerned about. DOE was not enforcing their own safety and health standards on the contractors due to this cloak of secrecy.

In 1985 Westinghouse came to Fernald replacing NLO. NLO's legacy has been well published due to the class action suit brought by the community. The cloak of secrecy for the most part has disappeared and been replaced by the threat of unemployment. Morale and employment are being held for ransom. On a daily basis, employees are reminded that bad press will close the doors of the FMPC forever. Think of the catch 22 that workers find themselves in everyday.!!

Since 1985, when the cloak of secrecy was lifted, the workers have gained much knowledge and awareness. Now we want to use that knowledge to continue our employment. But hundreds of workers have recently been laid off. Two unions have been completely eliminated due to these lay offs. The new work force that is being brought in does not have the level of awareness that the current workers have.

Every time we talk about clean up the facility, we need to ask, what is going to be done about for the workers like Floyd who are dying?? What is going to be done for the workers today who face not only work hazards and unemployment but can not get health insurance ?? Who will insure these people? Who will employ these laid off Fernald workers?? And is it true that employees are being laid off due to budget deficits caused by paying the lawyers fees to fight the communities' lawsuit and to defend NLO?

As the president of the FATLC, I am here to let the workers' needs be known. The workers at Fernald need four things. First, we need oversight by someone other than DOE and the contractor. Second, medical surveillance of all the workers who have ever been at the Fernald plant. Epidemiology alone will not protect the workforce. There must be studies of the health effects connected to Fernald. Third, the workers need guaranteed health benefits. Fernald workers who were laid off and sought new employment are being told they are too big of a risk to be covered by the new employer's health benefits. The workers who are still at Fernald can no longer afford our insurance. Costs have risen 80% over the past year. Fourth, the workers need job protection. Our biggest fear is that if the current workforce is not at Fernald, the community will also suffer. Appropriate, safe and efficient cleanup will also be effected. All future clean up efforts must involve the knowledge and expertise of the current experienced workforce.

Let me wrap up this presentation by stating how pleased we are that we can address questions to the Admiral. It is already apparent that the new DOE administration has taken a more pro-active position on the health and safety issues of the workers at the DOE nuclear facilities.

TESTIMONY

OF

MR. JESSE ABNEY
CHEMICAL OPERATOR

INTERNATIONAL CHEMICAL WORKERS UNION (ICWU), LOCAL #501
WESTINGHOUSE MATERIALS COMPANY OF OHIO
CINCINNATI, OHIO

BEFORE

THE SENATE COMMITTEE ON GOVERNMENTAL AFFAIRS
ON THE DEPARTMENT OF ENERGY RADIATION HEALTH EFFECTS RESEARCH
PROGRAM AND WORKING CONDITIONS AT DOE SITES

AUGUST 2, 1989
WASHINGTON, DC.

Prepared by:

Mr. Jesse Abney, ICWU Local #501
Mrs. Sally Abney
Mr. John Webster, ICWU Representative
Mr. David Ortlieb, ICWU Director
Health and Safety Department

Senator Glenn and members of the Committee, my name is Jesse Abney and I deeply thank you for allowing me to appear before this Committee Today. As a member of the International Chemical Workers Union, I have worked as a chemical operator for eight years in Cincinnati, Ohio (See Attachment 1 for a copy of my Biographical Sketch). Much of what I will relate to you today may shock you, but that is not my primary purpose. I come before you today to urge you to support the passage of federal legislation that would bring the DOE, its contractors and subcontractors under the jurisdiction of federal OSHA and NIOSH. Legislation is needed that will transfer all DOE occupational health research and experimental studies to the Department of Health and Human Services. Further, legislation is needed that will provide nuclear workers with comprehensive medical care, health benefits and income protections they rightfully deserve.

Several years ago, my wife and I saw the movie, Silkwood. How could I ever have imagined that some two and one-half years later I would be telling a U.S. Senate Committee that just as Karen Silkwood, I have tested positive to a company administered medical test for plutonium in my body. In addition, the medical staff at the Westinghouse Materials Production Facility has recently informed me that I have a high body burden of uranium - 235 in my lungs. How this is currently affecting or may affect my health in the future, I do not know with certainty. What I do know is that there is no known threshold radiation dose that is safe. Exposure to radiation, no matter how little carries some risk. Radiation causes many different kinds of cancer. It can cause leukemia (blood cancer), cancer of the thyroid, bone marrow, pancreas, cancer of the lungs and other organs. Also, it can cause genetic damage which may result in birth defects.

I first served my country as an Airman First Class in the U. S. Air Force. Two years in Georgia and two years overseas in Germany. Yet today as an employee at Fernald, I feel that I am just as much a government servant as when I served in the Air Force. Only now my government does not recognize me. When I first went to work at Fernald, I was told that even "taking an ashtray" was a federal offense since the Fernald plant was a government facility. It seems ironic that materialistic items receive full government protection, but the safety of nuclear workers does not!

I do my job well. I am not careless. I believe in the safety precautions and follow them and I have great respect for the dangerous materials with which I work. Despite my precautions, I am contaminated. As stated, I have medically tested positive for plutonium - 238 and 239/240 contamination and now have a high body burden of uranium 235 in my lungs. (Is there some humor in the fact that I do not even smoke!) Now what do I do? The talk is the plant is to be closed. Am I supposed to be elated? Will I be able to find another job and still support my family? Would another company be willing to cover me under their health insurance plan knowing that I'm a nuclear worker? How would I pay my monthly bills?

Does this seem like an endless list of questions? This is what workers at the Fernald plant are left with now. Questions that have not been answered or have been answered unsatisfactorily. These questions accompany us to work everyday and if a worker becomes contaminated, these questions become an even stronger workmate. Yet the answers provided by the DOE and Westinghouse become even weaker.

We the workers, I believe are treated as second class citizens. We are to do the work and "they" will take care of us. Only we know there is no "they" to take care of us. We are the guinea pigs. We perform important and dangerous work, but are made to feel expendable. This year our company health insurance at Westinghouse was actually weakened instead of strengthened! This is progress?

We are not mindless idiots. We are thinking, living individuals. We are willing to do our jobs. We want to do our jobs. We also want to work with respect. We want to be recognized, to have our ideas heard and considered. We want to know if illness and death comes because of our job that we and our families have protection and that we won't be thrown out in the street. We do not want to be in the late stages of cancer and have to fight in court for support. Nor do we want to leave that remedy to our families. We are tired of of being patted on the back and sent on our way. We are tired of platitudes. We are tired of being the ping pong balls batted between press, politicians, and plant operators. We are tired of being ignored by our government.

I have been asked to give a brief rundown of my history of radiation contamination as well as that of my fellow workers:

On April 21, 1987, I was notified by my supervisor, R. Dicken to report with union representation to S. Hennifeld, Director of Health-Physics at Westinghouse. Mr. Hennifeld told me that I had an unacceptable high amount of Plutonium.

I was then removed from my regular work responsibilities and placed in the men's locker room as a clean-up person.

Weekly specimens of urine were submitted for about 4 weeks. After weeks of waiting, I was informed that my urinalysis showed "acceptable" levels of Plutonium. I was then allowed to return to production.

In November of 1988, I was sent to Hanford, Washington for an in-vivo body count to be retested. I was told the facilities there had the "best equipment in the world". I was informed that my tests showed "acceptable levels of plutonium".

I don't know what "acceptable" levels of plutonium means as defined by the company. How can I have "acceptable" levels of plutonium in my body when a large sector of the scientific community believes that there is no safe level of exposure to plutonium? Furthermore, the radiation standards we have today were set in the 1950's. The present limit of 5 rems per year is not a safe worker exposure level. The International Chemical Workers Union supports the position that exposure limits be lowered to .5 rems per year with a lifetime accumulation of 17.5 rems. The current limit is 10 times too high. Many prominent scientists today are calling for the tenfold reduction in the maximum allowable exposure to nuclear workers. Also, I should add that allowable limits of exposure to radiation have changed dramatically in this century as scientists found out more about the harmful effects. In 1910, the exposure limit was 100 rems\year. In 1934, the limit was lowered to 30 rems/year, and in 1948, the limit was lowered again to 15 rems/year. Then in 1958, the limit was lowered again to the present exposure limit of 5 rems/year. To date, Westinghouse officials have not provided me with a detailed written explanation in layperson language of what my exposure to plutonium means in terms of the short and long term health effects. I've only been provided with the raw data.

In March, 1989, I was informed by plant management that I had been contaminated by radiation a second time based on a routine body count that had been given to me at the Westinghouse plant in Cincinnati. This time I was told there was an unacceptable level of uranium - 235 in my lungs. Subsequently, I have been directed by the company to regularly submit specimens. Today, as I speak, I still have a high lung burden of uranium - 235. I do not know how the exposure occurred. I have been advised by Westinghouse officials that there is continuing reason for concern and that they will continue to monitor my health status. It's important to note that Westinghouse never provided me with a material safety data sheet for the agents that I could be exposed to in my work area. I did receive periodic safety and health training at the plant, but this training was typically more generic in nature, rather than tailored to the specific exposures that I as an individual worker might suffer in my work area. I believe these are serious deficiencies in the Westinghouse overall worker training and education programs at the plant. If DOE facilities fell under federal OSHA jurisdiction, standards such as the federal Hazard Communication Standard would require the employer to educate workers specifically about the dangerous materials that they may encounter in their work area! Also, the Hazard Communication Standard requires the employer to afford all workers the opportunity to see and review the material safety data sheets for their given work area.

Currently, I am working closely with my union and they have an independent clinic reviewing my overall medical and radiation exposure records. For the Committee's information and review, I am providing the Committee with a copy of my Occupational Radiation Exposure History (See Attachment 2).

I wish to inform the Committee that there have been a number of other incidents at the Fernald plant involving workers and plutonium:

It is with deep regret that I report to the Committee that Robert J. Casey, a Chemical Operator, 31 years of age, was contaminated with plutonium in mid-year 1986. Tragically, Casey was laid-off by Westinghouse in December of 1988 and most likely will never be called back to work at Fernald. His unemployment benefits and medical benefits have run-out and he has not been able to find a comparable job. He currently is working part time as a roofer and earns approximately $13,000 a year as compared to the $27,000 annual salary he drew at the Westinghouse plant. Casey was informed by Westinghouse in April, 1987 that his urinary plutonium level from a sample submitted in September, 1986, returned elevated. Westinghouse claimed that the results of his specimen showed a plutonium result which was only slightly above the detection limits for plutonium for the procedure. But a subsequent urine study conducted independently at the University of Waterloo, Ontario, Canada showed Casey to have plutonium levels that were approximately tenfold higher than the single level detected by Westinghouse. The elevated value was found more than one-year after the first abnormal value found by Westinghouse (See Attachment 3). According to Casey, he was unaware that he was working with out-of-spec plutonium at the time of his exposure. Casey has filed numerous complaints with Westinghouse and the DOE headquarters offices in Oak Ridge, Tennessee demanding that Westinghouse pay the costs for on-going medical evaluations and medical bills which have piled-up since he was laid-off from the plant. Since his lay-off, he has been forced to sell-off many of his personal assets to "make ends meet". Please be aware that I am providing the Committee with one set of records related to Mr. Casey's plutonium contamination at the plant (See Attachment 4). Included is a list of an additional workers who have been exposed to plutonium and have been laid-off, transferred to another plant, terminated or have left the plant for other employment.

I believe Westinghouse and the DOE have an ethical responsibility to protect workers who have served their nation in the nuclear industry. These workers' standard of living deserve to be protected. They should be provided with an educational stipend, medical care protection and a bridge to ensure that workers who are displaced have income and medical care protections until benefits lost as a result of displacement are equal in new employment.

The third incident I will report on involving plutonium became public in September, 1988. Results received in August, 1988, by Westinghouse from urinalysis testing of eight Fernald workers indicated detectable levels of plutonium. According to an employee bulletin (See Attachment 5) released by Westinghouse on September 9, 1988, exposure to plutonium came from working with Plutonium Out of Specification (POOS) material in the plant processing area. POOS material contains higher concentrations of plutonium (about 10 parts per billion) than is acceptable in recycled uranium normally handled at the plant. It is my understanding that about 50 other union members who worked on the POOS project were not given medical tests for possible exposure to plutonium.

Subsequently, the Fernald Atomic Trades and Labor Council demanded that Westinghouse underwrite the cost for independent medical testing conducted by a union designated clinic. Westinghouse preliminarily agreed to the union's demand with the stipulation that the union submit the laboratory methodology that would be utilized for analyzing urine and fecal specimens. The union submitted the requested methodology, but Westinghouse rejected it saying the methodology was substandard. To date, Westinghouse has not agreed to pay for independent medical testing by a union designated clinic despite repeated attempts by the union to have them do so.

A fourth incident involving plutonium was reported by Westinghouse officials in an employee bulletin released on September 15, 1988 (See Attachment 6). The bulletin reported that eleven drums of waste material were identified as having higher than acceptable levels of plutonium (above the current DOE level of 10 parts per billion). Further, the bulletin reported that about 35 persons who worked in the sampling line area were sent for bioassay (urine sampling) to determine if there was an uptake of plutonium. The exact health status of these 35 at present time is not fully known.

In closing, I believe that the DOE worker protection programs, those of their contractors and subcontractors are grossly inadequate. The time for major change in these critical areas are long overdue. Bold and progressive legislative and regulatory actions must be immediately taken to fully protect nuclear workers and their families.

The International Chemical Workers Union offers the following recommendations for the Committee's consideration:

1. Amending the Atomic Energy Act so as to eliminate the exemption of nuclear workers from OSHA jurisdiction.

2. Passage of legislation to extend NIOSH jurisdiction to all nuclear workers including coverage under the National Institute for Occupational Safety and Health.

3. Lawmakers must adjust the maximum occupational exposure limits for radiation downward by a factor of 10 so as to reflect new found information of increased health risks.

4. Remove DOE from its monopoly over radiation health research and transfer this responsibility to the Department of Health and Human Services including the following areas of research:

epidemiology, environmental research, health registries (including the transuranic registry), human clinical research and animal studies.

5. The establishment of a Trust Fund for worker protection. Its objective would be to protect the nuclear workers' standard of living, provide for an education stipend, provide medical care protection, and provide a bridge to insure that workers who are displaced have income and medical care protections until benefits lost as a result of displacement are equal in new employment.

6. That clean-up and remediation efforts at nuclear sites be offered first to employees facing displacement as a result of production relocation or facility closure.

7. Introduce legislation that will provide adequate monies for employee training purposes.

8. The ICWU calls for the establishment of a National Nuclear Workers Training Center, similar to the training center operated by ICWU/United Steelworkers of America (USWA), at Cincinnati, Ohio.

9. That medical surveillance programs be established to trace all DOE workers for their lifetimes.

10. **The immediate placement of worker representatives on all DOE research, advisory, and investigative boards, including all DOE human subjects protections committees.**

11. ICWU calls for a comprehensive review of national security restrictions as related to the revelation of health and environmental problems at federal facilities.

    There is an immediate need for clarification of security restraints on DOE contractor employees, in language that ordinary workers can understand.

12. That for reasons grounded in security, safety, health and environmental concerns, sub-contracting should be curtailed to an absolute minimum.

13. That the DOE must show, through environmental impact statements, and community impact statements, that the reorganization of the industry requires a plant closure.

14. ICWU call for a comprehensive investigation of the DOE contract and administration system, with concrete recommendations for changing this system.

    Specifically, the ICWU recommends that the following costs of operations become non-reimbursable by the DOE:

> Grievance arbitration costs; workers' compensation costs; legal defense costs; fines and penalties; public relations costs; labor relations costs during strikes, and costs of corrective actions such as cleanup of illegally dumped wastes.

I believe that Fernald can continue to stay open, but the workers have to be involved and provided with the truth and treated like thinking humans. They have to know the dangers of the job and know that others recognize those hazards. We have to know that if the accidents happen, or the unexplained contaminations, or the health complications such as Cancer, that our welfare will be of the first importance.

Finally, I believe it is of great importance that the wives and family of nuclear workers be given the opportunity to speak-out on this issue at Congressional hearings such as are being conducted today. I am proud to say that my wife, Sally Abney, is here with me today. In this vein, I have included a three-page statement written by my wife as an attachment to my written testimony (See Attachment 7).

I thank the Committee for allowing me to testify before you today.

ATTACHMENT 1

Jesse Abney

Born: 6-14-34
Mt. Vernon, Kentucky

Education: Graduate Talawanda High School
Oxford, Ohio
Attended Miami University -
Oxford, Ohio

Military Service: United States Air Force
Sergeant
Overseas duty: Germany

Organizational Affiliations:

- United States Horse Cavalry Association
- Little Big Horn Association
- USCAR (United States Cavalry Association Reactivated)
- Kentucky Fox Hunters Association

Other Activities:

- Outrider for the Rolex International 3-Day Event - Annually at the Kentucky Horse Park, Lexington, Kentucky
- Outrider for the Pan American Games, Indianapolis, Indiana
- Participant in various educational public displays of military history
- Have helped supply pictures and details of equipment for award winning author of military history books

Interests:

- Collector Horse Cavalry memorabilia - all periods
- Books - History of U.S. and/or military history (primarily Horse Cavalry) (most prized possession: library card!)
- Horseback riding

ATTACHMENT 2

WESTINGHOUSE MATERIALS COMPANY OF OHIO
OCCUPATIONAL RADIATION EXPOSURE HISTORY

Identification

Name: Jesse W. Abney	**Badge No: 1818**
Date: 07/21/89 Birthdate: 06/14/34	SSN: 405-40-8926 Company: WMCO
Start Monitoring Date: 08/03/81	End Monitoring Date: 12/31/88

External Exposure Summary
Dose Equivalent (rem)

Exposure Category:	4th QUARTER	1988 ANNUAL	LIFETIME
Whole Body	0.000	0.225	2.699
Skin	0.000	0.877	12.031
Hands	NA	NA	NA
Neutrons	NA	NA	NA

In Vitro Analysis (urinalysis & fecal analysis, if applicable)
See Attachment 1

In Vivo Analysis
See Attachment 2

Internal Exposure Summary
Effective Dose Equivalent (rem)

ANNUAL 1988	LIFETIME	COMMITTED
NA	NA	NA

Total Exposure Summary (External + Internal)
Effective Dose Equivalent (rem)

ANNUAL 1988	LIFETIME	COMMITTED
0.225	2.699	NA

* NA - NOT APPLICABLE

In Vitro Analysis (Urinalysis)

Attachment 1

URANIUM URINALYSIS REPORT FOR J. W. ABNEY :

DATE OF SAMPLE	TYPE SAMPLE*	MG. U/LITER	DATE OF SAMPLE	TYPE SAMPLE*	MG. U/LITER
04/15/81	10	0.000	10/03/83	30	0.007
08/03/81	10	0.001	10/27/83	49	0.023
11/04/81	30	0.002	10/28/83	40	0.006
12/16/81	30	0.001	11/01/83	30	0.009
01/04/82	30	0.001	12/01/83	30	0.015
03/01/82	30	0.002	01/03/84	30	0.003
04/26/82	20	0.004	02/01/84	30	0.010
06/01/82	30	0.002	03/01/84	30	0.028
09/01/82	30	0.004	04/02/84	30	0.014
12/01/82	30	0.011	05/01/84	30	0.012
01/06/83	30	0.016	06/01/84	30	0.005
02/01/83	30	0.008	07/02/84	30	0.014
03/01/83	30	0.006	08/01/84	30	0.008
04/04/83	30	0.008	08/31/84	50	0.008
04/05/83	20	0.005	09/04/84	30	0.003
05/02/83	30	0.014	09/11/84	20	0.003
06/01/83	30	0.013	10/01/84	30	0.007
07/01/83	30	0.022	11/01/84	30	0.005
08/01/83	30	0.017	12/03/84	30	0.010
09/01/83	30	0.012			

In Vitro Analysis (Urinalysis)

(continued)

SSN	Badge #	Sample Date	Sample Type	Sample Result (mg U/l)
405-40-8926	1818	85/01/02	30	0.008
405-40-8926	1818	85/02/04	30	0.005
405-40-8926	1818	85/03/01	30	0.009
405-40-8926	1818	85/04/01	30	0.004
405-40-8926	1818	85/05/01	30	0.008
405-40-8926	1818	85/06/03	30	0.004
405-40-8926	1818	85/07/01	30	0.007
405-40-8926	1818	85/08/01	30	0.002
405-40-8926	1818	85/09/03	30	0.006
405-40-8926	1818	85/10/01	30	0.007
405-40-8926	1818	85/11/01	30	0.010
405-40-8926	1818	85/12/02	30	0.003
405-40-8926	1818	86/01/06	30	0.010
405-40-8926	1818	86/02/03	30	0.008
405-40-8926	1818	86/02/26	20	0.008
405-40-8926	1818	86/03/03	30	0.009
405-40-8926	1818	86/04/01	30	0.010
405-40-8926	1818	86/05/01	30	0.006
405-40-8926	1818	86/06/02	30	< 0.003
405-40-8926	1818	86/07/01	30	< 0.003
405-40-8926	1818	86/08/18	30	0.005
405-40-8926	1818	86/09/02	30	0.004
405-40-8926	1818	86/10/01	30	0.009
405-40-8926	1818	86/11/03	30	< 0.003
405-40-8926	1818	86/11/30	30	< 0.003
405-40-8926	1818	87/01/02	30	< 0.003
405-40-8926	1818	87/01/22	49	0.015
405-40-8926	1818	87/01/23	40	0.004
405-40-8926	1818	87/01/26	40	0.008
405-40-8926	1818	87/01/27	40	0.008
405-40-8926	1818	87/02/01	30	< 0.003
405-40-8926	1818	87/02/13	59	< 0.003
405-40-8926	1818	87/02/27	50	0.003
405-40-8926	1818	87/03/02	30	< 0.003
405-40-8926	1818	87/03/06	50	0.003
405-40-8926	1818	87/03/10	20	0.010
405-40-8926	1818	87/03/13	50	0.006
405-40-8926	1818	87/03/20	50	< 0.003
405-40-8926	1818	87/04/01	30	0.006
405-40-8926	1818	87/05/01	30	0.004
405-40-8926	1818	87/06/01	30	0.003
405-40-8926	1818	87/07/01	30	0.003
405-40-8926	1818	87/08/03	30	0.005
405-40-8926	1818	87/09/01	30	0.006
405-40-8926	1818	87/10/01	30	< 0.003
405-40-8926	1818	87/11/01	30	< 0.003
405-40-8926	1818	87/11/30	30	< 0.003
405-40-8926	1818	88/01/01	30	0.004

In Vitro Analysis (Urinalysis)

(continued)

405-40-8926	1818	88/01/26	40	0.005
405-40-8926	1818	88/02/01	30	0.004
405-40-8926	1818	88/02/09	40	0.009
405-40-8926	1818	88/02/25	40	0.004
405-40-8926	1818	88/02/26	40	0.005
405-40-8926	1818	88/02/26	49	0.007
405-40-8926	1818	88/02/26	49	0.005
405-40-8926	1818	88/02/29	40	0.006
405-40-8926	1818	88/03/01	30	0.003
405-40-8926	1818	88/03/10	20	0.003
405-40-8926	1818	88/04/02	30	0.005
405-40-8926	1818	88/04/23	49	< 0.003
405-40-8926	1818	88/04/24	40	< 0.003
405-40-8926	1818	88/05/03	30	0.003
405-40-8926	1818	88/06/15	30	0.006
405-40-8926	1818	88/07/15	30	0.007
405-40-8926	1818	88/07/30	30	0.006
405-40-8926	1818	88/09/01	30	< 0.003

Explanation of Codes:

Code Explanation

10 = Pre-Employment Sample
20 = Annual Sample
30 = Routine Sample
40 = Incident - Follow-up Sample
45 = Incident Sample Left During Shift
49 = Incident - End of Shift Sample
50 = Special Sample
60 = Termination Sample
R = Recall Sample (exa: 3R - Routine Sample Recall)
VF = Visitor First Sample
VR = Visitor Routine Sample
VE = Visitor Exit Sample

BDL = Below Detection Level

In Vitro Analysis

Attachment 1

Table 2. Plutonium Bioassay Results

NAME	BADGE #	SAMPLE TYPE	SAMPLE DATE	Results in dpm/sample Pu-238	Pu-239/240	SAMPLE VOL.(ml)	LAB
ABNEY, J. W.	1818	URINE	08-Jan-87	6.58E-02	7.13E-01	1.06E+03	UST
ABNEY, J. W.	1818	URINE	23-Apr-87	< 2.0 E-02	< 2.0 E-02	9.02E+02	UST
ABNEY, J. W.	1818	URINE	29-Apr-87	< 2.0 E-02	< 2.0 E-02	3.83E+02	UST
ABNEY, J. W.	1818	FECAL	16-Jul-87	< 2.0 E-01	< 2.0 E-01	2.70E+02	UST

Plutonium Bioassay Analyses Notes.

Laboratory Detection Limits for plutonium in urine:
IT : for samples analyized between 8/1/88 and 1/1/89,
1.3 E-01 dpm/sample,
for all other samples, 0.2 dpm/sample.
UST : 2 E-02 dpm/sample.

In Vivo Analysis

Attachment 2

Date Monitored	*Facility	U-235 (ug)	Total U (mg)	U-235 (nCi)	U-238 (nCi)	Th-232 (nCi)
11/15/82	MIVRML	ND	ND	NA	NA	NA
06/06/83	MIVRML	73.8	ND	NA	NA	NA
01/30/84	MIVRML	55.4	ND	NA	NA	NA
08/12/85	MIVRML	87.56	9.28	NA	NA	NA
05/27/86	MIVRML	49.96	ND	NA	NA	NA
05/26/87	MIVRML	57.68	6.12	NA	NA	NA
05/23/88	MIVRML	52.69	7.11	NA	NA	NA

ND - None Detected.

* MIVRML - Mobile In Vivo Radiation Monitoring Laboratory.
IVEC - In Vivo Examination Center (FMPC Facility).

Special In Vivo Analysis
Battelle Pacific Northwest Laboratories

Attachment 2-A

	MDA in Lungs					MDA in skeleton
Date Monitored	Th-234 (nCi)	U-235 (nCi)	Am-241 (nCi)	Pu-239 (nCi)	Th-232 (nCi)	Am-241 (nCi)
11/3/88	ND	ND	ND	ND	ND	ND

MDA - Minimum Detectable Amount

Greater Cincinnati Occupational Health Center
AT PROVIDENCE HOSPITAL

Suite 203
Providence
Medical Plaza

2450 Kipling Avenue
Cincinnati, Ohio 45239
(513) 541-0561

ATTACHMENT 3

January 11, 1989

Robert Casey
944 Summit Road
Cincinnati, Ohio 45205

Dear Mr. Casey:

I am writing in follow-up to our telephone conversation of about two weeks ago. As I told you on the telephone, I spoke with a health physicist at the National Institute for Occupational Safety and Health (NIOSH) regarding the assessment of plutonium you received from Westinghouse. The NIOSH health physicist confirmed that this is the type of assessment that would give some idea of your exposure and internal dose of plutonium. Although the exercise itself is adequate, I believe it may be based on some faulty assumptions. For example, in the urine testing that was done through this Health Center, you were shown to have an elevation of plutonium approximately ten fold higher than the single elevated level detected by Westinghouse. Because of this elevated value more than one year after the first abnormal value, the assumption of a one-time exposure is probably faulty. The best way to assess your true body burden of plutonium is to do serial urine testing for plutonium and to construct an elimination curve; then one could apply the same type of internal dose assessment that was done by Dr. Hinnefield, but with greater accuracy.

As I stated on the telephone, I am not sure that calculating your increased risk of developing some form of cancer or other disease from your exposure is going to be the most meaningful exercise for you. In other words, telling you your risk of developing cancer is two times or five times higher than the general population does not mean that you will or won't get that disease.

Your concern about future health problems arising from your exposures at FMPC could be addressed by intermittent examinations, including a medical history, physical examination and appropriate laboratory testing. This would allow you to discuss symptoms you feel are abnormal and would allow for early detection of adverse health effects. It would also enable you to address other workplace exposures. If you would like to pursue that in this health center, please schedule an appointment or give me a call. I hope we can be of help to you in sorting out this complicated situation.

Sincerely,

Linda S Forst

Linda S. Forst, M. D.

LSF/ric

NLO, Inc.
A SUBSIDIARY OF NL INDUSTRIES, INC.
CINCINNATI, OHIO 45239

ATTACHMENT 4

December 6, 1985

DEC 5 11 14 AM '85

SUBJECT TRANSURANIC ANALYSES FOR PRODUCTS, RESIDUES GENERATED AT THE FMPC AND OFFSITE RECEIPTS

TO E. M. Nutter

FROM D. C. Bonfer

REFERENCE

Samples of various products, intermediate products and residues have been analyzed for transuranics.

Analyses obtained for depleted products and residues are presented in Table I. Np^{237}, Pu and Tc 99 are within acceptable limits. Therefore, routine sampling of these materials for transuranics is not anticipated at the present time.

The majority of the refinery feed inventory located on the Plant 1 storage pad has been sampled and analyzed for Np^{237} and Pu. These results are listed in Table II.

Analytical results obtained for the Plant 8 recovery feed inventory are presented in Table III.

Several lots of residues remaining in the FMPC inventory which originally were received from Martin Marietta Energy Systems, Inc., Paducah, Ky. have been analyzed for Np^{237} and Pu. These values are presented in Table IV.

Np^{237} and Pu results for various enriched products produced at the FMPC are presented in Table V.

Miscellaneous materials sampled and analyzed for transuranics are listed in Table VI.

Management plans for processing materials listed in the tables have been prepared and forwarded to the DOE office for approval.

Each lot of enriched residue, intermediate product and product produced will continue to be analyzed for transuranics until such time as it is determined that values are within specification or it is feasible to use a reduced sampling plan.

DCBonfer
D. C. Bonfer

DCB:mlf
Attachments

cc: M. W. Boback
D. L. Dunaway
R. L. Elliott
R. L. Gardner
B. Gessiness
D. L. Herman
✓ S. L. Hinnefeld

A PRIME CONTRACTOR FOR THE DEPARTMENT OF ENERGY

TABLE I

ANALYSES FOR DEPLETED PRODUCTS AND RESIDUES

Lot Number		No. Cont.	Net Lbs.	% U	Lbs. U	% U^{235}	Np[3]		Pu[3]		Tc 99[3]	
							d/m/g	ppb	d/m/g	ppb	d/m/g	ppb
H093-513-D034-0281		105	34380	1.56	536	.221	1900	1213	1700	12	290	
H093-523-D062-0281		1	774	1.30	10	.206	2600	1660	2800	21		
H093-520-D062-0281		98	30664	2.42	742	.232	460	294	240	1.8		
H093-658-D069-0281		25	10930	16.12	1762	.210	77	49	67	<1		
H093-534-D101-0281		65	26156	84.66	22144	.210	60	38	11	<1		
S052-536-D132-0280		10	1513	2.03	31	.523	680	434	290	2.1	290	2.
H093-533-D135-0281		1	279	20.64	58	.210	130	83	410	3		
H093-825-D154-5143		60	27922	-	-	-	46	29	76	<1		
M_gF_2 Bin 8		-	-	1.35	-	-	1500	958	140	1	590	16
Derby Composite[1]	85-10							21		<1		7
" "	85-11							34		<1		2
" "	85-17							34		<1		<1
" "	85-53A							17		<1		6
" "	85-64							15		<1		1
" "	85-55							8		<1		<1
" "	85-56							36		<1		3
" "	85-57							15		<1		<1
" "	85-58							43		<1		<1
" "	85-62							8		<1		1
Ingot Composite[2]	85-2							19		<1		8
" "	85-4							9		<1		9
" "	85-5							14		<1		8
" "	85-6							6		<1		8
" "	85-7							12		<1		5
" "	85-12							27		<1		7
" "	85-13							36		<1		4
" "	85-14							20		<1		4
" "	85-15							33		<1		2
" "	85-16							33		<1		2
" "	85-18							15		<1		3

(1) Ten derby samples were used in each composite.
(2) Thirty ingot samples were used in each composite.
(3) Values are based on uranium assay.

NEPTUNIUM AND PLUTONIUM VALUES FOR REFINERY FEEDS

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	% U^{235}	Np (1)		Pu (1)	
						d/m/g	ppb	d/m/g	ppb
S099-112-0031-0439	73	40778	21.40	8726	.816	3400	2171	14000	103
S099-112-0031-0440	73	39171	23.85	9342	.806	3300	2107	18000	132
S099-112-0031-0441	70	37283	14.86	5540	.898	1600	1022	7400	54
S099-112-0031-0442	79	37056	11.72	4343	.930	1300	830	11000	81
S099-112-0031-0445	71	42075	10.86	4569	.930	740	472	4700	34
S099-112-0031-0446	35	20068	12.73	2555	.929	1400	894	7900	58
S099-112-0031-0447	75	45807	12.29	5630	.922	1300	830	6800	50
S073-112-0037-0562	9	4131	1.94	81	.729	5400	3448	19000	140
X500-112-0037-0331	124	67969	2.11	1434	.921	2400	1532	21000	150
" " " -0382	137	82366	1.98	1631	1.033	3200	2043	15000	110
" " " -0413	1	686	3.48	24	.936	900	575	3900	29
" " " -0456	3	2035	2.18	44	.950	1500	958	17000	120
" " " -0478	5	1902	5.60	107	.890	1600	1022	15000	110
" " " -0479	17	11042	2.59	286	.860	2400	1532	18000	132
" " " -0487	5	2577	2.40	62	.870	2300	1469	14000	103
" " " -0520	5	1496	2.30	34	.880	4200	2682	33000	242
" " " -0522	60	35600	1.20	427	.797	2500	1596	21000	154
" " " -0523	94	59892	1.30	766	.770	3100	1980	26000	190
" " " -0533	107	65993	1.50	990	.818	3400	2171	19000	140
" " " -0534	94	61098	1.38	843	.812	2100	3141	24000	180
" " " -0542	104	58158	1.50	872	.900	3800	2426	37000	270
" " " -0543	116	65505	1.60	1048	.850	2800	1788	44000	320
" " " -0545	94	52432	1.30	682	.820	4400	2810	77000	570
" " " -0576	9	5178	1.62	84	.736	6000	3831	24000	176
" " " -0583	9	5664	1.18	67	.800	7600	4853	36000	264
" " " -0586	5	2646	1.69	45	.779	6600	4214	33000	242
X884-112-0037-0433	5	2524	8.22	207	1.098	880	562	4600	34
" " " -0455	12	6602	1.66	110	.930	4800	3065	14000	100
" " " -0464	5	2616	2.28	60	.849	1500	958	15000	110
" " " -0539	60	32736	1.30	426	.770	2700	1724	15000	110
X888-112-0037-0354	69	40599	1.65	668	1.065	4400	2810	9800	72
" " " -0454	105	65464	2.12	1388	1.050	4500	2873	19000	140
" " " -0500	98	57340	1.80	1032	.900	4800	3065	29000	210
" " " -0501	114	66068	1.90	1255	.920	2900	1852	23000	170
" " " -0502	121	68864	1.70	1171	.950	2600	1660	29000	210
X767-112-0088-0343	36	20160	2.10	423	1.488	3200	2043	13000	95
" " " -0344	35	18973	1.82	336	1.513	3699	2299	19000	139
" " " -0346	41	21470	2.15	462	1.239	3300	2107	20000	147
" " " -0347	34	19179	2.01	385	1.515	3400	2171	25000	183
" " " -0348	35	21187	1.87	396	1.332	3000	1916	19000	139
" " " -0349	33	18944	1.96	371	1.669	3200	2043	13000	95
" " " -0350	33	19282	2.01	388	1.553	2100	1341	24000	176
" " " -0351	33	18908	1.71	323	1.498	2900	1852	24000	176
" " " -0352	33	18952	1.78	337	1.431	3000	1916	27000	198
" " " -0353	36	20734	1.87	388	1.362	2300	1469	22000	160
" " " -0355	30	17004	2.28	388	1.555	2500	1596	8600	63
" " " -0356	28	16276	1.69	275	1.559	5400	3448	15000	110
X888-112-0037-0544	100	62773	1.90	1193	.927	4100	2618	61000	448
" " " -0546	29	14867	1.40	208	.825	3200	2043	62000	460

TABLE II (CONT'D.)

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	% U^{235}	Np (1)		Pu (1)	
						d/m/g	ppb	d/m/g	ppb
X767-112-0088-0357	29	16342	1.94	317	1.641	2200	1405	13000	95
" " " -0358	30	17262	1.95	337	1.500	2100	1341	24000	176
" " " -0359	37	21500	6.88	1479	1.382	6700	4278	15000	110
" " " -0360	31	17982	6.23	1120	1.398	3900	2490	8200	60
" " " -0361	35	19910	2.96	589	1.257	3200	2043	31000	228
" " " -0362	47	27916	2.11	589	1.494	2300	1469	9900	73
" " " -0365	25	14731	2.46	362	1.412	1400	894	21000	154
" " " -0366	27	15423	2.89	446	1.707	1100	702	12000	88
" " " -0367	26	15412	2.86	441	1.560	1600	1022	19000	139
" " " -0368	25	15030	2.44	391	1.750	1300	830	10000	73
" " " -0369	25	15092	2.48	374	1.520	1500	958	5900	43
" " " -0370	27	16205	6.30	1021	1.489	1600	1022	5900	43
" " " -0386	32	19124	3.96	757	1.403	1500	958	3200	23
" " " -0448	35	19824	3.54	702	1.190	1600	1022	13000	95
X500-112-0088-0378	28	17819	18.85	3359	.933	590	377	12000	88
" " " -0379	28	18679	22.42	4188	.927	420	268	3100	23
" " " -0380	30	19334	16.37	3165	.953	380	243	2600	19
" " " -0381	33	20703	4.63	959	1.340	1800	1149	7200	53
" " " -0402	46	21604	2.95	637	.791	1000	638	12000	88
" " " -0459	43	25616	7.67	1965	.970	730	466	6400	47
" " " -0460	39	22952	8.69	1995	.880	780	498	6700	49
" " " -0461	35	19698	9.64	1899	.970	2800	1788	8900	65
" " " -0462	43	24802	6.51	1615	.920	2900	1852	8900	65
" " " -0463	45	25906	8.51	2205	.920	990	632	6100	45
" " " -0484	46	24110	12.30	2966	.920	780	498	4300	31
" " " -0485	47	23994	6.40	1536	.920	870	555	6720	49
" " " -0486	43	25211	6.30	1588	.920	1100	702	4600	34
X888-112-0088-0387	28	17780	11.57	2057	.957	580	370	4900	36
" " " -0398	37	22514	14.59	3285	.949	740	472	3600	26
" " " -0400	36	22222	9.98	2218	.983	740	472	5300	39
" " " -0401	35	20049	6.81	1365	.949	1300	830	9900	73
" " " -0421	39	22664	5.47	1240	.966	1400	894	5500	40
" " " -0422	40	22736	3.09	703	.980	1800	1149	6000	44
" " " -0423	37	22050	2.39	527	1.075	5500	3512	11000	81
" " " -0424	36	22301	3.92	874	1.150	3400	2171	9600	70
" " " -0425	37	22114	4.49	993	.980	3600	2299	9300	68
" " " -0426	32	18910	4.56	862	1.068	1800	1149	7200	53
" " " -0427	35	21746	6.20	1348	1.061	1800	1149	4100	30
" " " -0428	34	20603	6.00	1236	1.010	1700	1085	6800	50
" " " -0458	45	26346	4.32	1138	1.040	1500	958	8500	62
S026-826-D143-6438	61	16343	4.14	677	.260	1900	1213	4100	30
S051-826-D143-6439	61	16094	3.11	501	.510	1400	894	5500	40
S066-826-D143-6441	61	16146	7.50	1211	.660	900	575	3100	23
S067-826-D143-6404	61	16776	4.46	749	.666	2200	1405	19000	140
S069-826-D143-6405	61	16523	6.90	1140	.690	2000	1277	15000	110
" " " -6406	61	15304	4.44	680	.693	4500	2873	20000	147
S095-825-0143-5127	20	2359	5.70	134	.990	2100	1341	5000	37
S095-826-0143-6398	61	15046	3.40	512	.860	13000	8301	73000	540
" " " -6399	61	13711	4.96	680	.800	6200	3959	23000	170

TABLE II (CONT'D.)

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	% U^{235}	Np (1) d/m/g	Np (1) ppb	Pu (1) d/m/g	Pu (1) ppb
S095-826-0143-6400	61	13729	3.36	447	.880	5500	3512	12000	88
" " " -6401	61	15160	8.16	1237	.870	3400	2171	8900	65
" " " -6402	61	13016	1.98	258	.830	6800	4342	14000	100
" " " -6403	61	15879	3.60	572	.770	58000	37037	11000	810
" " " -6407	61	16381	5.42	888	.820	3100	1979	8600	63
" " " -6408	61	12335	7.20	889	.720	1500	958	4300	32
" " " -6409	61	15317	2.64	405	.840	4400	2180	9900	73
" " " -6410	61	16255	5.87	955	.830	3000	1915	6900	50
" " " -6411	61	15583	6.32	985	.850	1700	1085	4300	32
" " " -6415	61	17239	7.56	1304	.940	5400	3448	6300	46
" " " -6417	61	16894	6.17	1043	.890	3300	2107	9800	72
" " " -6418	61	16945	3.72	631	.920	2900	1852	11000	81
" " " -6419	61	16410	6.88	1129	.890	2400	1532	4800	35
" " " -6420	61	15945	7.12	1136	.900	1900	1213	4000	29
" " " -6421	61	16285	10.42	1697	.910	1000	638	2200	16
" " " -6422	61	17784	9.10	1619	1.040	940	600	3600	26
" " " -6423	61	16403	7.71	1265	1.190	1100	702	4800	35
" " " -6424	61	16928	6.09	1031	.970	15000	9578	40000	290
" " " -6425	61	14284	5.39	770	.900	7900	5045	33000	240
" " " -6426	61	[illegible]	[illegible]	1195	.880	15000	9578	38000	280
" " " -6427	61	[illegible]	6.51	976	.890	5700	3640	12000	88
" " " -6428	61	[illegible]	4.96	901	.820	11000	7024	39000	290
" " " -6429	61	17759	8.96	1592	.930	7500	4789	17000	120
" " " -6430	61	18044	6.51	1229	.900	4100	2618	13000	95
" " " -6431	61	17105	6.64	1136	.860	3700	2363	11000	81
" " " -6432	61	19259	4.94	952	.940	3000	1916	17000	120
" " " -6433	62	17641	4.42	780	.940	1800	1149	11000	81
" " " -6434	61	18044	3.07	554	.900	1100	702	5700	42
" " " -6435	61	18715	5.12	959	.930	1000	638	2400	18
" " " -6436	61	18256	7.20	1315	.900	6900	4406	27000	200
" " " -6437	61	16903	4.30	727	.720	2600	1660	16000	117
" " " -6440	61	15687	3.91	613	.840	4400	2810	6600	480
" " " -6442	61	16231	4.39	713	.730	1300	830	11000	81
" " " -6443	61	14489	5.46	791	.970	910	581	3900	29
S056-826-0143-6444	61	15924	4.22	672	.560	890	568	3600	26
S095-826-0143-6445	61	15627	6.69	1045	.910	1600	1022	5700	42
" " " -6446	61	14853	5.65	830	.840	2600	1660	14000	102
S061-826-0143-6447	61	14103	4.74	668	.610	16000	10217	56000	411
S095-826-0143-6448	61	15612	3.19	498	.750	46000	29374	270000	1982
" " " -6449	61	14816	3.08	456	.510	3100	1979	22000	160
" " " -6450	61	14757	4.44	655	.760	1600	1022	9700	71
S095-112-0159-0469	74	11546	8.00	924	.950	2900	1852	11000	81
" " " -0470	72	13009	7.40	963	.950	1400	894	4000	29
" " " -0471	82	14198	5.20	738	.886	4700	3001	17000	120
" " " -0472	82	15338	8.80	1350	.860	1300	830	3500	26
" " " -0473	79	16937	15.60	2642	.940	670	428	3200	23
" " " -0476	80	19050	14.60	2781	.920	2200	1405	13000	95
" " " -0477	81	19254	15.90	3061	.910	1700	1085	6300	46

TABLE II (CONT'D.)

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	% U^{235}	Np (1)		Pu (1)	
						d/m/g	ppb	d/m/g	ppb
S095-112-0159-0481	65	12283	4.70	577	.944	3100	1979	14000	100
" " " -0482	95	19471	17.70	3446	1.040	3000	1916	13000	95
" " " -0483	76	13266	6.30	836	.970	2200	1405	9300	68
" " " -0490	76	15286	5.40	825	.924	2900	1852	15000	110
" " " -0491	93	18321	14.60	2675	1.000	3400	2171	12000	88
" " " -0492	87	14070	4.60	647	.880	5900	3767	29000	210
" " " -0493	84	15516	8.80	1365	.910	2400	1532	10000	73
" " " -0494	84	14910	10.60	1580	.950	840	536	3100	23
" " " -0495	86	14605	7.50	1095	.940	4500	2873	17000	120
" " " -0496	77	11956	4.00	478	.900	2400	1532	11000	81
" " " -0497	73	14259	6.60	941	.910	780	498	3100	23
" " " -0498	92	20573	16.90	3467	.950	1800	1149	11000	81
" " " -0499	76	16399	12.60	2066	.950	1600	1022	4800	35
" " " -0503	83	14432	4.00	577	.920	11000	7024	43000	316
" " " -0504	96	16130	5.10	823	1.120	2500	1596	7400	54
" " " -0505	104	18067	8.20	1481	1.050	1100	702	4700	34
" " " -0506	79	17900	8.40	1504	.980	1100	702	3400	25
" " " -0507	85	15893	7.60	1208	.950	1300	830	2900	21
" " " -0508	78	12789	5.30	678	.940	1300	830	3500	26
" " " -0535	82	17206	12.40	2134	.990	1300	830	5200	38
" " " -0536	95	16652	11.10	1848	.860	820	524	4300	32
" " " -0540	74	12148	7.80	948	.900	2900	1852	12000	88
" " " -0541	76	14904	6.30	939	.850	3700	2363	21000	150
S072-CBJ-0160-0061	1	9	72.68	7	.720	49	31	6.3	<1
S073-CBJ-0160-0061	1	13	61.42	8	.720	71	45	12	<1
S078-CBJ-0160-0061	1	6	66.86	4	.780	110	70	7.6	<1
S086-CBJ-0160-0061	1	7	65.53	5	.860	250	160	5.7	<1
S234-CBJ-0160-0062	1	13	49.90	6	2.330	68	43	17	<1
S255-CBJ-0160-0062	1	7	61.37	4	2.540	120	77	75	<1
S256-CBJ-0160-0062	1	9	47.10	4	2.550	440	281	19	<1
S263-CBJ-0160-0062	1	8	57.36	5	2.630	88	56	15	<1
S271-CBJ-0160-0062	1	6	30.51	2	2.660	81	52	130	<1
S272-CBJ-0160-0062	1	8	43.82	4	2.700	94	60	91	<1
S272-CBJ-0160-0062	1	7	34.62	2	2.760	91	58	100	<1
S302-CBJ-0160-0062	1	7	53.25	4	2.990	48	31	29	<1
S326-CBJ-0160-0062	1	8	10.88	1	3.250	440	281	48	<1
S339-CBJ-0160-0061	1	5	78.37	4	3.390	56	36	43	<1
S434-CBJ-0160-0061	1	7	65.68	5	4.320	280	179	220	1.6
S751-CBJ-0160-0062	1	3	37.34	1	7.460	250	160	570	4.2
S906-CBJ-0160-0061	1	2	37.92	1	9.500	450	287	330	2.4
S095-822-0154-4223	16	9264	58.45	5415	.940	280	179	1400	10
" " " -5221	35	31959	75.21	24037	.950	180	115	320	2.3
" " " -5222	35	30503	76.62	23372	.950	150	96	330	2.4
" " " -5224	37	31967	76.36	24410	.950	150	96	280	2.1
" " " -5227	27	22203	76.15	16908	.950	300	192	930	6.8
" " " -4230	61	48247	70.76	34140	.930	370	236	940	6.9
S125-822-0154-4219	19	14366	63.55	9130	.970	240	153	870	6.4
" " " -5220	10	7784	67.50	5254	1.125	520	332	1000	7.3
" " " -5228	5	3402	69.63	2369	1.080	560	378	1800	13
" " " -4229	34	20775	44.25	9193	1.080	780	498	2900	21

TABLE II (CONT'D.)

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	% U^{235}	Np $^{(1)}$ d/m/g	Np $^{(1)}$ ppb	Pu $^{(1)}$ d/m/g	Pu $^{(1)}$ ppb
S095-822-0155-2218	61	44650	57.10	25496	.910	260	166	1000	7.3
" " " -2226	53	50109	82.24	41210	.940	470	300	2300	17
S125-822-0155-2225	3	1576	53.40	842	1.050	490	313	2200	16
S110-FTA-0165-5935	1	444	84.25	374	1.130	-	-	790	5.8
S115-FTA-0165-5934	1	461	86.06	397	1.100	-	-	690	5.1
S125-FTA-0165-5507	1	420	83.90	352	1.250	300	192	550	4.0
" " " -5559	1	432	84.10	368	1.240	310	198	310	2.3
" " " -5608	1	455	88.40	402	1.240	420	268	790	5.8
" " " -5609	1	454	84.20	382	1.250	450	287	840	6.2
" " " -5615	1	458	85.40	391	1.240	410	262	730	5.4
" " " -5770	1	428	85.46	366	1.210	360	230	490	3.6
" " " -5814	1	462	82.36	381	1.130	260	166	460	3.4
" " " -5847	1	450	84.54	380	1.240	560	358	2800	21
" " " -5849	1	432	84.19	364	1.250	660	421	2300	17
" " " -5858	1	443	83.96	372	1.250	690	441	1800	13
" " " -5860	1	413	84.00	347	1.240	650	415	2000	15
" " " -5863	1	317	88.71	281	1.240	600	383	2000	15
" " " -5893	1	424	84.59	359	1.240	-	-	800	5.9
" " " -5899	1	415	83.94	348	1.220	-	-	770	5.7
" " " -5900	1	412	87.28	351	1.250	-	-	840	6.2
" " " -5905	1	392	84.43	331	1.240	-	-	1100	8.1
" " " -5911	1	450	85.02	282	1.250	670	428	2800	21
" " " -5913	1	338	85.54	259	1.240	560	357	2770	20
" " " -5919	1	327	85.25	279	1.240	630	402	2900	21
" " " -5924	1	460	86.08	396	1.240	620	396	2700	20
" " " -5925	1	333	87.20	290	1.240	650	415	3200	23
" " " -5929	1	445	85.93	382	1.240	700	447	3500	26
" " " -5945	1	416	84.53	352	1.110	-	-	520	3.8
" " " -5947	1	396	84.60	335	1.190	-	-	520	3.8
" " " -5956	1	434	85.65	372	1.240	-	-	740	5.4
" " " -5957	1	449	86.80	390	1.250	-	-	1200	8.8
" " " -5960	1	416	85.10	354	1.250	-	-	1300	9.5
" " " -5961	1	456	88.92	405	1.240	-	-	1300	9.5
" " " -5973	1	456	87.55	399	-	-	-	1300	9.5
" " " -5979	1	388	85.74	333	1.250	-	-	670	4.9
" " " -5982	1	353	84.49	298	1.250	450	287	1600	12
" " " -5983	1	358	84.38	302	1.250	450	287	1600	12
" " " -5996	1	451	85.84	387	1.240	380	243	660	4.8
" " " -5997	1	444	84.19	374	1.260	-	-	1300	9.5
" " " -5998	1	454	86.81	394	1.190	650	415	3200	23
" " " -5999	1	456	87.91	401	1.150	550	351	2100	15
" " " -6001	1	460	83.62	385	1.240	660	421	2800	21
" " " -6008	1	448	87.93	394	1.250	720	460	3100	23
" " " -6018	1	420	84.26	354	1.250	640	409	3700	27
" " " -6024	1	426	84.45	360	1.250	670	428	3100	23
S095-FTA-0165-6079	21	8644	85.24	7368	.940	-	-	760	5.6
" " " -6080	20	8030	85.25	6846	.940	-	-	690	5.1
" " " -6081	2	447	86.47	386	.950	-	-	990	7.3

TABLE II (CONT'D.)

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	% U^{235}	Np (1)		Pu (1)	
						d/m/g	ppb	d/m/g	ppb
S095-FTA-0165-6082	21	8696	84.89	7382	.950	-	-	840	6.2
" " " -6088	7	2719	84.62	2301	.950	-	-	710	5.2
" " " -6091	3	921	83.75	771	.950	-	-	750	5.5
S071-FTA-1165-6078	3	768	85.34	640	.510	-	-	41	<1
S095-FTA-0165-6126	21	8874	85.96	7628	.950	-	-	750	5.5
" " " -6127	9	3594	84.63	3042	.950	-	-	800	5.9
S125-FTA-0165-6227	1	412	85.01	350	1.240	400	255	810	5.9
S448-ARF-0165-0011	21	705	80.72	569	4.490	830	530	760	5.6
S448-ARF-0165-0013	41	1417	79.00	1119	4.480	870	555	620	4.6
1000-YUP-0167-0007	1	7	87.64	6	9.500	13	8	20	<1
S095-FTA-0165-5598	7	2701	77.30	2208	.940	170	108	520	3.8
" " " -5747	55	23437	87.95	20613	.950	250	160	770	5.7
" " " -5835	7	2644	84.53	2235	.950	670	428	860	6.3
" " " -5977	21	8511	84.48	7190	.950	1000	638	820	6.0
S125-FTA-0165-5463	1	362	84.40	306	1.240	380	243	460	3.4
" " " -5624	1	457	86.50	395	1.250	450	287	800	5.9
" " " -5884	1	436	84.44	368	1.240	870	555	2000	15
" " " -5949	1	396	84.03	333	1.240	430	275	440	3.2
S072-FXA-0165-0131	1	2	84.16	2	.720	56	36	9.7	<1
S113-FXA-0165-0128	1	19	82.04	16	-	840	536	290	2.1
S115-FXA-0165-0128	1	372	81.76	304	-	60000	38314	46000	338
S137-FXA-0165-0119	1	20	82.60	16	-	1100	702	5300	39
S145-FXA-0165-0123	1	169	82.18	139	-	1100	702	620	4.6
S158-FXA-0165-0124	1	187	82.12	154	-	430	274	370	2.7
S168-FXA-0165-0124	1	199	82.30	164	-	1400	894	2200	16
S170-FXA-0165-0124	1	191	80.60	154	-	1100	702	900	6.6
S172-FXA-0165-0124	1	192	80.16	154	-	6500	4151	1500	11
S177-FXA-0165-0125	1	189	81.72	154	-	1700	1085	3300	24
S184-FXA-0165-0124	1	191	81.32	155	-	490	313	1200	8.8
S189-FXA-0165-0128	1	34	79.58	27	-	37000	23627	81000	590
1023-FXA-X165-0130	1	21	55.47	12	-	710*	453	440	3*
1246-FXA-X165-0130	1	13	74.11	10	-	190*	121	700	5.1*
1357-FXA-X165-0131	1	12	65.90	8	-	110*	70	380	2.8*
S072-FZA-0166-0148	1	60	88.12	53	-	36*	23	3.3	<1*
S109-CCP-0166-0013	1	52	90.16	47	-	68*	43	<10	<1*
S150-CCP-0166-0013	1	104	86.73	90	-	42*	27	5	<1*
S161-CCP-0166-0007	3	730	89.04	650	-	30*	19	7	<1*
S199-CCP-0166-0013	1	50	86.00	43	-	20*	13	14	<1*
S283-CCS-0166-0004	1	2	-	-	-	35*	22	19	<1*
S400-YUD-0166-0002	5	210	-	-	-	30*	19	3	<1*
S605-CCS-0166-0004	1	2	-	-	-	64*	41	73	<1*
S200-CCP-0167-0014	1	101	92.70	94	-	36	23	6.2	<1
S248-FYA-0167-0129	1	38	86.97	33	-	28	18	3.6	<1
S894-CZA-0167-0058	1	1	88.24	1	-	150	96	630	4.6
A508-409-0202-0269	1	553	78.50	434	.850	90	57	130	.9

(1) Values are based on uranium assay.

* Values are on a sample basis.

TABLE III

ANALYTICAL RESULTS FOR PLANT B FEEDS

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	% U^{235}	Np (1)		Pu (1)	
						d/m/g	ppb	d/m/g	ppb
S095-530-H030-0258	3	1340	-	-	-	27000	17241	1000	7.3
" " " -0259	3	1160	-	-	-	7300	4661	840	6.2
" " " -0278	2	1068	-	-	-	510000	325670	59000	430
" " " -0279	4	1393	0.10	1	.930	14000	8940	6500	48
" " " -0280	3	1014	.09	1	.750	8300	5300	800	5.9
S079-112-0033-3145	11	6191	48.55	3006	.786	3600	230	960	7.0
X500-762-0033-0217	16	3047	2.20	67	.734	570	364	400	2.9
✓ X500-513-0034-0252	116	43418	1.84	799	1.039	6000	3831	40000	290
" " " -0253	1	598	2.85	17	.642	1100	702	7700	57
" " " -0254	23	8635	1.65	143	1.013	3200	2403	14000	100
" " " -0255	50	18734	2.16	405	.914	1700	1085	15000	110
" " " -0256	29	12751	1.56	199	.934	1900	1213	9600	70
" " " -0257	20	8770	1.73	152	.953	3200	2043	15000	110
" " " -0258	29	10981	1.57	172	.919	6000	3831	13000	95
" " " -0259	10	4869	1.72	84	.732	3500	2235	7100	52
" " " -0260	20	8166	2.25	184	.920	2200	1405	11000	81
" " " -0261	31	11401	2.04	233	.890	2100	1341	16000	120
" " " -0262	29	11537	1.58	182	.900	5400	3448	16000	120
" " " -0263	26	10927	1.97	215	.720	1300	830	12000	88
" " " -0264	27	12998	1.80	234	.800	1000	638	10000	73
" " " -0265	30	11040	1.50	166	.760	2000	1277	17000	120
" " " -0266	28	9784	1.70	166	.750	4900	3129	29000	210
" " " -0268	18	5994	2.33	140	.750	1700	1085	12000	88
" " " -0269	29	9895	1.90	188	.760	2000	1277	19000	140
" " " -0276	25	11470	1.62	186	.660	-	-	37000	270
" " " -0278	32	15386	1.52	234	.640	7800	4981	32000	230
" " " -0279	102	37843	1.42	537	.650	5000	3193	39000	290
" " " -0280	126	47681	1.77	844	.729	4000	2554	15000	110
X500-578-0034-0259	18	12694	1.85	235	.940	3500	2235	15000	110
" " " -0261	32	23095	-	-	-	2600	1660	13000	95
" " " -0263	7	4251	3.06	130	.930	770	492	5200	38
" " " -0276	5	2986	-	-	-	22000	14048	37000	27
X500-564-0034-0252	20	16406	-	-	-	2200	1405	13000	95
X767-518-0034-0250	1	830	-	-	-	1900	1213	8900	65
✓ X888-513-0034-0253	100	37902	1.51	572	1.006	5300	3384	23000	170
✓ " " " -0254	15	5091	1.64	83	1.026	5100	3257	19000	140
✓ " " " -0280	8	5963	3.47	207	.920	1500	958	9000	66
X500-518-0038-0270	80	45199	-	-	-	2700	1724	6600	48
X500-800-0038-0270	2	460	-	-	-	2500	1596	4800	35
X500-824-0038-0279	3	1637	-	-	-	9400	6002	4300	32
X888-518-0038-0270	21	10927	-	-	-	26000	16603	39000	2900
X888-800-0038-0270	1	320	-	-	-	4800	3065	12000	88
X500-900-0039-0279	1	67	-	-	-	1800	1149	7000	51
X948-965-0039-0279	2	1000	-	-	-	100000	63857	24000	180
S089-FTA-0041-5710	6	1947	36.60	713	.870	160	102	430	3.2
S095-210-0042-0276	1	226	6.18	14	.800	1200	766	3500	26
" " " -0279	29	14546	1.31	190	1.049	1300	830	450	3.3

TABLE III (CONT'D.)

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	% U^{235}	$Np^{(1)}$ d/m/g	$Np^{(1)}$ ppb	$Pu^{(1)}$ d/m/g	$Pu^{(1)}$ ppb
X500-100-0042-0275	1	92	9.47	9	1.171	5100	3257	16000	120
X500-112-0042-0270	3	478	2.30	11	1.030	1600	1022	7900	58
X888-946-0042-0273	3	891	0.44	4	.740	4100	2618	740	5.4
H069-920-H042-0273	3	880	52.57	463	.960	230	147	1200	8.8
" " " 0276	3	699	24.15	169	.930	850	543	1700	12
X500-400-0044-0260	4	1633	29.97	498	1.050	580	370	1900	14
A884-764-8049-0260	25	15276	56.60	8646	.980	450	287	1700	12
" " " 1260	5	1690	41.22	697	.900	400	255	1500	11
X500-578-0057-0266	2	1059	-	-	-	1200	766	4200	31
" " " 0267	5	3257	-	-	-	800	511	3100	23
" " " 0274	1	751	-	-	-	11000	7024	42000	310
" " " 0276	2	1265	-	-	-	1100	702	1100	8.1
" " " 0280	2	941	-	-	-	2400	1532	12000	88
X888-518-0057-0267	1	719	5.40	39	.880	1400	894	3700	27
X500-578-0057-0270	2	1451	-	-	-	440	281	3100	23
X884-512-2062-0258	12	4253	24.41	1038	.823	170	108	1300	9.5
" " " 0260	3	822	42.84	352	.880	110	70	760	5.6
" " " 0262	14	6128	44.91	2752	.850	85	54	400	2.9
" " " 0263	6	1988	-	-	-	130	83	710	5.2
S110-512-3062-0267	2	188	58.98	111	1.100	300	191	960	7.1
S125-512-4062-0258	7	2133	24.37	520	1.176	450	287	1300	9.5
" " " 0260	10	3746	33.36	1250	1.200	410	262	650	4.8
" " " 0267	5	1581	57.89	914	1.240	470	300	1000	13
" " " 0270	10	3126	29.61	926	1.170	690	441	5300	39
H112-310-0062-0272	6	661	49.92	330	.940	42	27	980	7.2
" " " 0273	6	992	69.18	687	1.780	22	14	45	<1
S086-214-0062-0256	3	620	73.40	455	.860	140	89	710	5.2
S098-214-0062-0255	3	314	27.80	87	.980	460	294	1400	10
S125-213-0062-0257	2	309	41.90	126	1.000	250	160	1000	7.3
" " " 0258	2	365	40.70	149	.980	110	70	1200	8.8
S125-214-0062-0258	2	300	39.70	119	1.050	390	249	740	5.4
X500-322-0062-0280	7	2124	28.87	826	.310	1000	638	120000	880
X500-512-0062-0259	9	3548	46.88	1663	.948	150	96	690	5.1
" " " 0260	6	2077	42.38	880	.950	190	121	900	6.6
" " " 0261	18	7054	37.90	2674	.950	180	115	980	7.2
" " " 0263	6	1995	45 26	903	.940	160	102	420	3.1
" " " 0264	11	4359	36.31	1583	.940	170	108	1000	7.3
" " " 0265	13	5170	35.45	1833	.880	170	108	960	7.1
" " " 0266	4	1266	33.43	423	.760	140	89	960	7.1
" " " 0267	19	8276	39.10	3236	.940	220	140	990	7.3
" " " 0268	11	4659	31.39	1462	.920	220	140	1300	9.5
" " " 0269	16	6230	37.01	2306	.910	180	115	1300	9.5
" " " 0270	6	2137	24.60	526	.900	550	351	1900	14
" " " 0271	9	3224	18.17	586	.870	780	498	2200	16

TABLE III (CONT'D.)

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	% U^{235}	$Np^{(1)}$ d/m/g	$Np^{(1)}$ ppb	$Pu^{(1)}$ d/m/g	$Pu^{(1)}$ ppb
X500-512-0062-0272	16	6474	28.70	1858	.760	580	370	1200	8.8
" " " 0273	20	7313	-	-	-	740	472	1500	11
" " " 0275	7	2672	44.87	1199	.760	710	453	850	6.2
" " " 0276	14	5011	16.23	814	.740	860	449	1600	12
" " " 0277	14	5554	30.70	1705	.540	330	211	650	4.8
" " " 0278	20	8090	33.94	2746	.660	320	204	1000	7.3
" " " 0279	46	19763	26.70	5277	.910	330	211	1700	12
" " " 0280	47	15801	28.18	4453	.870	400	255	1500	11
X500-520-0062-0259	4	1081	2.25	24	.883	2800	1788	5700	42
" " " 0260	10	2975	3.25	97	.874	1900	1213	8000	59
" " " 0261	20	6297	3.04	191	.790	1900	1213	14000	100
" " " 0262	1	330	2.64	9	.870	1900	1213	17000	120
" " " 0263	6	1795	2.38	43	.890	1700	1085	15000	110
" " " 0264	14	4614	2.60	120	.810	2000	1277	10000	73
" " " 0265	17	5664	2.30	130	.760	1200	766	13000	95
" " " 0269	19	6461	2.20	142	.730	2000	1277	15000	110
" " " 0277	19	6225	3.48	217	.390	2700	1724	10000	73
" " " 0279	72	26022	1.80	468	.730	4900	3129	25000	180
" " " 0280	69	23266	4.88	1135	.830	1700	1085	10000	73
X500-523-0062-0260	1	283	1.87	5	.750	3200	2043	12000	88
" " " 0276	1	700	3.21	22	.630	2700	1724	13000	95
" " " 0278	4	1306	1.69	22	.652	3300	2107	20000	150
" " " 0279	3	1142	1.40	16	.720	7800	4981	23000	170
" " " 0280	8	4556	1.60	73	.720	3300	2107	12000	88
X884-512-0062-0269	4	1326	34.28	455	.850	180	115	730	5.4
" " " 0270	3	511	23.68	121	.850	410	262	1600	12
" " " 0273	7	2121	50.84	1079	.830	1000	638	1100	8.1
" " " 0275	9	3191	14.74	471	.760	1300	830	3800	28
X884-520-0062-0260	1	327	2.88	9	.870	2500	1596	14000	100
" " " 0262	11	3751	2.46	92	.910	2000	1277	10000	73
" " " 0263	13	4023	3.18	128	.870	1600	1022	12000	88
" " " 0270	5	1187	2.40	28	.730	970	619	6900	51
X884-523-0062-0263	3	1148	1.57	18	.810	2800	1788	8400	62
H068-980-M067-0266	5	934	12.10	113	1.230	300	191	350	2.6
" " " 0272	3	346	7.00	24	1.250	680	434	560	4.1
" " " 0275	6	1312	7.56	100	1.240	700	447	440	3.2
" " " 0276	1	369	4.20	16	.950	1400	894	840	6.2
" " " 0279	1	107	2.45	3	1.070	720	460	390	2.9
" " " 0271	2	275	2.50	7	1.190	720	460	590	4.3
S125-221-4068-0264	7	1516	0.01	-	1.120	310000	197956	16000	120
S095-FTA-0068-5766	21	4416	27.35	1208	.940	290	185	230	1.7
" " " 5287	4	413	20.60	85	.930	290	185	1000	7.3

TABLE III (CONT'D.)

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	U^{235}	Np (1)		Pu (1)	
						d/m/g	ppb	d/m/g	ppb
S095-HXA-0068-1529	52	13129	23.70	3112	.950	520	332	770	5.7
" " " -1534	58	13874	21.30	2955	.950	270	172	350	2.6
" " " -1540	40	9367	26.77	2508	.950	270	172	370	2.7
" " " -1544	23	5756	26.60	1531	.950	240	153	390	2.9
" " " -1549	53	13260	24.70	3275	.950	300	191	240	1.8
" " " -1557	25	6294	28.90	1819	.950	190	121	700	5.1
" " " -1560	28	6821	30.30	2067	.950	160	102	430	3.2
" " " -1564	51	14496	24.38	3535	.950	400	255	870	6.4
" " " -1567	25	5719	27.61	1579	.950	320	204	740	5.4
" " " -1569	17	4359	24.34	1061	.950	310	198	1400	10
" " " -1570	7	1403	25.48	357	.950	300	192	840	6.2
S099-FTA-0068-5481	21	5221	28.60	1493	.990	110	70	220	1.6
" " " -5482	21	4646	25.30	1175	.980	390	249	250	1.8
" " " -5484	21	4131	22.70	938	1.010	180	115	300	2.2
" " " -5485	15	3374	24.80	837	.990	180	115	240	1.8
" " " -5820	21	4258	23.34	994	1.040	280	179	510	3.7
S125-HXA-0068-1529	32	8434	23.40	1974	1.250	940	600	580	4.3
" " " -1540	25	6414	27.19	1744	1.240	640	409	970	7.1
" " " -1544	24	6177	25.40	1569	1.250	550	351	640	4.7
S095-FTA-0068-5879	16	3178	21.62	687	.940	330	210	1800	13
S099-FTA-0068-5821	18	3321	23.26	773	.970	240	153	1200	8.8
S101-FTA-0068-5589	5	756	22.20	168	1.000	370	236	650	4.8
S115-HXA-0068-1564	1	264	24.73	66	1.130	440	281	1100	8.1
X500-965-0069-0175	21	9260	1.60	148	.940	1300	830	780	5.7
" " " -0176	10	4703	4.10	193	.920	560	357	500	3.7
" " " -0178	21	9056	4.50	408	.970	430	274	140	1.0
" " " -0179	21	8323	6.50	541	.920	910	581	1300	9.5
" " " -0180	8	3248	4.80	165	.940	400	255	1600	12
" " " -0183	21	8598	5.35	460	.945	1100	702	230	1.7
X500-965-0069-0188	21	8660	3.36	291	.951	420	268	180	1.3
" " " -0189	21	8366	2.58	216	.950	690	441	830	6.1
" " " -0190	21	9253	2.83	262	.940	580	370	530	3.9
" " " -0191	21	9104	2.19	199	.950	1400	894	1300	9.5
" " " -0192	21	8784	2.88	253	.950	790	504	590	4.3
X888-658-0069-0265	9	3568	39.50	1409	1.010	62	40	340	2.5
" " " -0266	14	5736	-	-	-	100	64	320	2.3
" " " -0268	11	4064	41.80	1699	.870	170	108	780	5.7
" " " -0272	4	1202	32.70	393	.900	320	204	1100	8.1
" " " -0273	14	5145	27.80	1431	.920	180	115	870	6.4
X888-965-0069-0177	12	5225	3.90	204	1.090	1000	638	570	4.2
" " " -0178	9	4127	3.30	136	1.220	1300	830	610	4.5
" " " -0182	21	8531	3.50	299	.950	660	421	640	4.7
" " " -0186	21	8741	14.78	1292	1.200	250	160	280	2.1
" " " -0187	15	6525	6.14	401	1.230	820	524	430	3.2
" " " -0193	14	5473	2.37	130	.970	910	581	540	4.0
" " " -0195	9	2939	1.94	57	1.010	1500	958	1000	7.3
S125-HXA-0068-1573	33	7959	27.94	2224	1.240	430	275	1200	8.8

TABLE III (CONT'D.)

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	U^{235}	Np [1] d/m/g	Np [1] ppb	Pu [1] d/m/g	Pu [1] ppb
A508-400-2065-0265	5	568	76.00	432	.940	170	108	640	4.7
A508-429-2065-0273	5	2367	81.55	1931	.916	670	428	2200	16
A508-431-2065-0271	5	1817	77.20	1403	.930	770	492	1500	11
S125-400-2065-0265	1	452	81.80	370	1.250	670	428	2100	15
S125-407-4065-0271	1	560	74.82	419	.900	300	191	1500	11
S125-407-4065-0272	1	515	76.20	392	1.230	580	370	5900	43
S125-407-4065-0273	1	550	83.40	459	.930	990	632	2600	19
A508-400-0065-0266	3	1004	82.20	825	.980	310	198	1100	8
S125-400-0065-0265	1	891	78.20	697	1.240	590	377	2100	15
S125-407-4082-0272	1	192	76.90	148	1.170	560	357	5300	39
A508-409-0082-0272	1	166	74.60	124	1.130	1100	702	2400	18
S125-407-0082-0270	7	4322	74.90	3237	1.250	660	421	4500	33
S125-732-4210-0278	8	453	75.80	343	1.260	450	287	1000	7.3
S099-732-0210-0278	3	110	75.52	83	1.090	250	160	440	3.2
S095-534-H101-0279	50	20485	78.91	16165	.950	720	460	3000	22
H068-927-M101-0272	38	6666	84.50	5633	1.250	870	555	4500	33
S095-535-H132-0279	17	7745	71.69	5612	.940	950	607	2800	21

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[1] Values are based on uranium assay.

TABLE IV

ANALYTICAL VALUES FOR RESIDUES RECEIVED FROM MARTIN MARIETTA ENERGY SYSTEMS PLANT, PADUCAK, KY.

Lot Number	No. Cont.	Net Lbs.	% U	U Lbs.	% U^{235}	Np (1)		Pu (1)	
						d/m/g	ppb	d/m/g	ppb
S090-FYC-0018-0191	12	4148	7.30	303	.870	110	70	26	0.2
S088-FYC-0018-0117	28	1290	7.40	95	.750	110	70	250	1.8
S095-FYC-0018-0117	10	3836	9.60	368	.870	64	41	54	0.4
S100-FYC-0018-0117	3	103	6.60	7	.790	93	59	41	0.3
X948-FYC-D018-0451	13	3912	10.60	415	-	80	51	33	<1
X884-FYC-0018-0452	7	2270	13.60	309	.780	150	96	32	<1
S067-FYC-D065-0116	4	2181	43.90	957	.570	60000	38314	93000	683
S069-FYC-D065-0116	1	620	72.40	449	.710	480	306	1600	12
S070-FYC-D065-0116	13	647	60.40	391	.600	2900	1852	21000	150
S060-FYC-D065-0117	3	1097	71.10	780	.600	400	255	540	4
S086-FYC-0065-0117	1	767	13.90	146	.950	120000	76628	180000	1321
S095-FYC-0065-0117	1	669	56.30	377	.980	14000	8940	82	0.6
X948-FYC-D065-0451	7	284	6.18	18	.580	350	223	93	<1
X884-FYC-0065-0452	7	293	6.00	18	.750	300	191	210	1.5
S070-FYC-D069-0116	22	7346	12.60	926	.640	5300	3384	25000	183
S089-FYC-0069-0117	20	7364	16.20	1190	.830	23000	14687	12000	88
S096-FYC-0069-0117	3	939	20.30	191	.960	3300	2107	6400	47
S059-FYC-D069-0190	6	1718	11.20	192	-	10000	6386	17000	125
S090-FYC-0069-0191	25	9606	19.60	1883	-	5900	3767	7500	55
X948-FYC-D069-0451	18	7722	13.43	1037	-	18000	11494	22000	160
X884-FYC-0069-0452	10	4118	18.89	778	.750	1000	638	1800	13
X500-FYC-0069-0452	7	3199	15.59	499	.890	460	294	870	6.4

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(1) Values are based on uranium assay.

TABLE VI

MISCELLANEOUS SAMPLES ANALYZED FOR TRANSURANICS

Lot or Sample Number	Date	% U	U g/l	Np [1] d/m/g	Pu [1] d/m/g
N003-817-V001-0008	4-24-85	0.48			130000
Tank F1-400	6-12-85				170000
Tank F1-400 A11	6-14-85				410000
Tank F1-401	6-12-85				160000
Tank F1-401	6-15-85				150000
Tank F1-402	6-15-85				64000
Tank F1-403	6-17-85		.024		12000
Tank F1-203 026	8-6-85 } 20,000 gal		0.13		200000
Tank F1-203A 027	8-6-85 }		0.08		230000
Tank General Sump B14	8-6-86		0.91		470000
Tank 5 General Sump 708	8-6-85 55,000 gal		0.094		430000
Tank F3E-224 D7	6-11-85				1200
Tank F3E-222 D10	6-12-85				570
Tank F3E-222 D16	6-15-85				680
UNH 225 D18	6-17-85				1100
Scrubber Acid D40			49.1		1400
Scrubber Acid D37			38.2		2400
OK Liquor Tank 222 D2	7-5-85		90.0		380
OK Liquor Tank 225 D4	7-9-85		89.4		520
OK Liquor Tank 222 D5	7-9-85		94.0		330
OK Liquor Tank 224 D3	7-8-85		92.8		180
OK Liquor Tank 225 D6	7-12-85		90.9		990
OK Liquor Tank 225 D15	8-2-85		90.0		660
UNH - S/W C6	8-13-85		161		2800
UNH-F1-26 C104	8-23-85		267		870
UNH-F1-26 C2	9-5-85		267		1400
UNH-F1-26 C8	9-12/9-18-85			430	1300
Evap. Prod. F1-405 A5	8-7-85		195		5600
Evap. Prod. F1-310 A6	8-7-85		409		560
Evap. Prod. F1-311 A7	8-7-85		148		5800
Evap. Prod. F1-312 A8	8-7-85				5400
Evap. Prod. F1-317 A9	8-7-85				5100
Evap. Prod. A3	9-5-85		32.2		5700
Evap. Prod. A4	9-5-85		43.1		4100
Plt. 5 Sludge DJR-001					33*

[illegible] per JR Henry

[1] Values are based on uranium assay.

* Values are on a sample basis.

ANALYTICAL VALUES FOR VARIOUS ENRICHED PRODUCTS PRODUCED AT THE FMPC

Lot Number	No. Cont.	Net Lbs.	% U	Lbs. U	% U^{235}	Np (1) d/m/g	Np (1) ppb	Pu (1) d/m/g	Pu (1) ppb	Tc 99 d/m/g	Tc 99 pp
X500-112-0035-0586	94	69678	1.23	857	.811	5600	3575	17000	120		
" " " -0587	96	67260	1.29	868	.841	4000	2554	14000	100		
" " " -0588	97	68448	1.26	862	.831	3800	2426	23000	170		
S125-263-4200-0201	20	23142	82.35	19057	1.249	230	147	1300	9.5		
" " " -0202	20	22808	81.88	18675	1.248	200	128	1200	8.8		
" " " -0203	20	22241	81.83	18200	1.250	220	140	1000	7.3		
" " " -0204	20	22772	81.85	18639	1.249	210	134	1000	7.3		
Derby 98970	UF_4	From Refinery UO_3			1.250	1200	766	3700	27	34000	
94000					1.250	1200	766	4400	32		
94020					1.250	1100	702	3800	28		
94030					1.250	1200	766	4400	32	44000	1
94040					1.250	590	377	2800	20		
94070					1.250	620	396	3700	27	39000	1
94080					1.250	900	575	5000	37		
69410	75%	A508 UF_4 + 25% Refinery UO_3			.95	180	115	680	5.0		
69470					.95	310	198	760	5.6		
69760					.95	250	160	1100	8.1		
69800					.95	190	121	700	5.1		
69520					.95	390	249	1200	8.8		
69570					.95	240	153	940	6.9		
69630					.95	280	179	1200	8.8		
69850					.95	230	147	710	5.2		
69680					.95	330	211	890	6.5		
94140	57.5%	A508 UF_4 + 42.5% Pilot Plant			1.25	170	108	150	1.1		
94150					1.25	140	89	140	1.0		
94230					1.25	170	108	150	1.1	84000	22
94260					1.25	180	115	110	<1		
94280					1.25	200	128	120	<1		
94300					1.25	230	147	160	1.2	100000	26
94350					1.25	190	121	150	1.1		
95360					1.25	170	108	120	<1		
94380					1.25	130	83	150	1.1	87000	22
Middle Billet Sample N7620					1.25	330	211	500	3.7		
7640					1.25	470	300	1100	8.1		
7660					1.25	500	319	640	4.7		
7680					1.25	490	313	1100	8.1		
7700					1.25	510	326	1000	7.3		
7720					1.25	440	281	970	7.1		

(1) Values are based on uranium assay.

NLO, Inc.
A SUBSIDIARY OF NL INDUSTRIES, INC.

P. O. BOX 39158
CINCINNATI, OHIO 45239

PHONE: AREA CODE: 513-738-6200

March 24, 1986

Dear Robert J. Casey,

December 31, 1985 marked the termination of NLO, Inc. as the contract manager of the FMPC for the Department of Energy. Over the 34 year period of NLO tenure, the FMPC contributed significantly to the defense of our nation. Both NL and NLO Management know FMPC operations have been successful in meeting the objectives and goals set by the Government. This success was due primarily to the combined efforts of all of the employees of NLO, Inc. We are extremely proud of and grateful to each of you who were employed at the FMPC during these years.

We want to wish you and all employees continued success and we are certain those who remain at the FMPC with the new contractor will continue to exhibit the fine spirit and dedication NLO, Inc. was privileged to enjoy. Again, many thanks for your contributions over the years.

Sincerely,

T. C. Rogers, Chairman & CEO
NL Industries, Inc.

F. W. Montanari, President
NLO, Inc.

R. M. Spenceley, Manager
NLO, Inc.

A PRIME CONTRACTOR FOR THE DEPARTMENT OF ENERGY

Attention Mr. R. L. Egle
Ass't Manager for Safety and Enviroment
United States of Energy

(Subject)

In reguards to my safety complaint appeal of Sept 09. 1988 and reguard to the copy of the letter I'm sending you from the Greater Cincinnati Ocupational Health Center Providence Medical Plaza:

My opinion is there are gross negelegance on behalf of D.O.E. and Westing House. also I feel that there should be more consideration. of this matter. I am writing this letter because I can not seem to get Westing House and D.O.E. togeather on this circumstance. also I think that there should be more profesionalism in there profesion and job duties.

As you can see according to the letter the assistance is based on faulty assumptions. According to this letter there will be future medical cost that would arise at no fault of mine. this matter will have to dealed with. since I am now presently unemployed from Westing House Feel materials with no medical benifits what so ever. Which would cause financial. emotional. and time consuming. burdon on me. I feel I can not maintain the cost for future medical expense. also early detection of health defects would be benifical on my behalf. In reguard to the letter I sent to you November 22. 1988 I requested an audiane with you at your earliest convenience time. I did not get it. So now I will reconfirm that request.

Very Sincerely your.

Robert J. Casey

FMPC
GRIEVANCE REPORT
(2nd. Step)

No. A [illegible]

EMPLOYEE'S NAME: Robert J.Casey	BADGE NO.: 2991	JOB CLASSIFICATION: Chemical Operator	SHIFT: 1st shift #3
PLANT: Plant 2/3	IMMEDIATE SUPERVISOR: Jim Mize	DATE & TIME OF INCIDENT: (IF ANY) Current and ongoing	

DESCRIPTION OF INCIDENT OR COMPLAINT: The incompetent and insensitive manner in which my samples for in plant and independent analysis have been and are currently being processed.

ALLEGED CONTRACT VIOLATION: Art.1 Section 2 Pg.1 - Art.11 Section 1(A) (1) - Art.11 Section 1(B)

Art.11 Section 3(7) Page 58 -and ALL other related Articles.

RELIEF OR ADJUSTMENT SOUGHT: That Mr. Casey's samples be processed IMMEDIATELY AND the analysis is to be placed in Mr. Casey's and/or Union Representative Bob Schwab's, Westinghouse's and DOE'S hands simultaneously. Futhermore that Mr. Casey be afforded,at westinghouse's expense the opportunity to seek independant analysis and be made whole of ALL MENTAL AND PHYSICAL SUFFERING HE NOW ENDURES PRESENTLY AND IN THE FUTURE.

Signature ______ (EMPLOYEE) Date 6/2/87

Union Rep.-Joint Safety Committee

Signature R.S. L.B. T.T (UNION STEWARD)

Grievance Presented To ______ (SUPERVISOR) Date ______

SECOND STEP REPLY BY DEPARTMENT REPRESENTATIVE:

Reply Presented To ______ (UNION STEWARD)

Signature ______ (DEPARTMENT REPRESENTATIVE)

Grievance Satisfactorily Settled? ☐ Yes ☐ No

Date ______

Signed ______

INSTRUCTIONS: Prepare in quadruplicate. Present all four copies to Supervisor before second step meeting. After second step reply is written, the green copy is retained by the Supervisor and forwarded to Employee Relations. The remaining yellow, white, and pink copies are given to the Union Steward. If grievance is satisfactorily settled, pink copy is returned to the Supervisor who forwards it to Employee Relations; white copy is returned to grievant and yellow copy to Union President for file. If the grievance is not settled in the second step, pink, white and yellow copies are given to the Union President for referral to the third step on the pink copy.

FMPC-HR-481 (REV. 3/17/86)

GRIEVANCE REPORT

(3rd. Step)

No. A 28[illegible]

NOTICE OF APPEAL TO THIRD STEP: (UNION GRIEVANCE COMMITTEE)

Expedited to third step in accordance with Article XI, Section 3(7).

Signed ______________________ (CHAIRMAN, UNION GRIEVANCE COMMITTEE)

Appeal Presented To ______________________ Date June 3, 1987

Date of Third Step Meeting June 15, 1987

THIRD STEP REPLY: (HUMAN RESOURCES DEPARTMENT REPRESENTATIVE)

See attached statement for third step answer.

Grievance Satisfactorily Settled? ☐ Yes ☐ No

Signed Lisa G. Robinson (HUMAN RESOURCES DEPARTMENT REPRESENTATIVE)

Signed ______________________ (CHAIRMAN, UNION GRIEVANCE COMMITTEE)

Reply Presented to Union Grievance Committee June 22, 1987 (DATE)

Date of Request for Arbitration ______________________

Date of Arbitration Meeting ______________________

REMARKS:

FMPC-HR-881 *(Reverse)* (REV 3/17/86)

```
30-Jun-87 09:22 AM        United States Testing Company Inc., 2800 George Washingtor Way, Richland, Wa                PAGE
                                              Bioassay Analysis Report
                                   WESTINGHOUSE MATERIALS OF OHIO - P.O  #887552-00
                                              Results reported on 870625

                         SAMPLE                                      OVERALL         TOTAL        ANALYSIS     ANALYSIS         UST
CUSTOMER#   NAME          DATE     ISOTOPE        RESULT            UNCERTAINTY      SAMPLE        ALIQUOT       DATE            ID

2991-C      R CASEY     05MAY87    PU238    *  0.00E+00 DPM/SA  4.56E-03 (1S)  4.28E+02 ML   1.00E+00 SA   17JUN87  VD0226   PU238
                                   PU239    *  0.00E+00 DPM/SA  4.56E-03 (1S)  4.28E+02 ML   1.00E+00 SA   17JUN87  VD0226   PU239

2991-B      R CASEY     04MAY87    PU238    *  0.00E+00 DPM/SA  4.13E-03 (1S)  8.57E+02 ML   1.00E+00 SA   17JUN87  VD0231   PU238
                                   PU239    * -1.72E-03 DPM/SA  1.73E-03 (1S)  8.97E+02 ML   1.00E+00 SA   17JUN87  VD0231   PU239





* means a result less than or equal to the contractual limit
```

**Westinghouse
Materials Company
of Ohio**

PO Box 398704
Cincinnati, Ohio 45239

513 738 6200

June 30, 1987

I, Robert Casey, give permission to have the results of my urinalysis released to Robert Schwab, FATLC Safety Representative.

Robert Casey

United States Testing Company, Inc.
Richland Division

2800 GEORGE WASHINGTON WAY
RICHLAND, WASHINGTON 99352 (509) 375-3131

LABORATORY SERVICES
RADIOCHEMISTRY
RADIATION DOSIMETRY
NUCLEAR SERVICES
BIOASSAY
AGRICULTURAL SERVICES
ANALYTICAL CHEMISTRY
ENGINEERING INSPECTION
POLLUTION CONTROL

July 15, 1987

Robert Casey
944 Summit Avenue
Cincinnati OH 45205

Dear Mr. Casey:

At the request of William Hayes of Westinghouse Materials Company of Ohio, we are providing you with a copy of the plutonium results on your urine samples.

The contractual detection limit for this analysis is 0.02 dpm/sa.

If you have any questions or comments, please call me at (509) 375-3131.

Sincerely,

UNITED STATES TESTING COMPANY, Inc.

Mildred M. Kellogg

Mildred M. Kellogg
Supervisor
Bioassay

738-6200

MMK:lmm

xc: File

OUR LETTERS AND REPORTS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED. AND THEY AND THE NAME OF THE UNITED STATES TESTING COMPANY, INC. OR ITS SEALS OR INSIGNIA, ARE NOT TO BE USED UNDER ANY CIRCUMSTANCES IN ADVERTISING TO THE GENERAL PUBLIC AND MAY NOT BE USED IN ANY OTHER MANNER WITHOUT OUR PRIOR WRITTEN APPROVAL. SAMPLES NOT DESTROYED IN TESTING ARE RETAINED A MAXIMUM OF THIRTY DAYS.
MEMBER OF THE SGS GROUP (SOCIETE GENERALE DE SURVEILLANCE)

```
                              Bioassay Analysis Report
                     WESTINGHOUSE MATERIALS OF OHIO - P O  #8-89693-8
                             Results reported on 870917

                        SAMPLE                                     OVERALL        TOTAL     ANALYSIS    ANALYSIS      UST
CUSTOMER#   NAME      DATE   TYPE   ISOTOPE       RESULT          UNCERTAINTY     SAMPLE    ALIQUOT      DATE          ID

2991        R CASEY  16JUL87 FECES  PU-238   *  1.04E-01 DPM/SA 4.07E-02 (1S) 1.42E+02 G  1.00E+00 SA  15SEP87 VD0342  PU-238
                                    PU239/40 *  3.56E-02 DPM/SA 2.06E-02 (1S) 1.42E+02 G  1.00E+00 SA  15SEP87 VD0342  PU239/40
```

Mailed to ~~99~~ 944 Summit
Cincinnati Ohio 45205
Returned "No one at address, R. Casey

Mailed to 977 Sweeney
Cincinnati Ohio 45202
No Such Address.

Directed by W Hoop WMCO to send
again to
944 Summit
Cincinnati OH ~~5~~ 45205

Sent 11/5 Ignore US Testing

872-4282

UC

~~[illegible]~~

Dr. Kerenkos

U.S. Department of Energy
Washington, D.C.

ORDER

DOE 5480.8

5-22-81
Republished: 11-16-87

SUBJECT: CONTRACTOR OCCUPATIONAL MEDICAL PROGRAM

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1. PURPOSE. To establish the minimum occupational medical program requirements for the Department of Energy (DOE).

2. CANCELLATION. Chapter VIII, DOE 5480.1A, ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION PROGRAM FOR DOE OPERATIONS, of 5-22-81.

3. SCOPE. The provisions of this Order [redacted] to all [redacted] performing work for the Department as provided by law and/or contract and as implemented by the appropriate contracting officer.

4. OBJECTIVES.

   a. [redacted] their work environments.

   b. To assist management in assuring the placement of DOE contractor employees in work that they can perform without undue hazard to themselves, their fellow workers, plant facilities, plant site environments, the public at large, or the general environment.

   c. To provide continuing medical surveillance of DOE contractor employees and their job tasks and work environments.

   d. To assure the early detection, treatment, and rehabilitation of the ill or injured employee.

   e. To apply preventive medical measures toward the maintenance of good physical and mental health of employees.

   f. To encourage DOE contractor employees to maintain their physical and mental health and educate themselves in health and safety by providing them with professional guidance and counseling.

5. REFERENCES.

   a. DOE 1324.2, RECORDS DISPOSITION, of 5-28-80, which assigns responsibilities and authorities and prescribes policies, procedures, standards, and guidelines for the orderly disposition of records.

DISTRIBUTION:
All Departmental Elements

INITIATED BY:
Assistant Secretary for
Environment, Safety, and Health

b. DOE directives in the 5480 series which outline the Departmental environmental protection, safety, and health protection program policies, procedures, and responsibilities.

c. DOE 5484.1, ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION INFORMATION REPORTING REQUIREMENTS, of 2-24-81, which establishes procedures for the reporting of information having environmental protection, safety, or health protection significance.

d. DOE 5500.1A, EMERGENCY MANAGEMENT SYSTEM, of 2-26-87, which establishes policy and requirements for an Emergency Management System that provides for the development, coordination, and direction of Departmental planning, preparedness, and readiness assurance for response to operational, energy, and continuity of Government emergencies involving or requiring Departmental assistance.

e. DOE 6430.1, GENERAL DESIGN CRITERIA, of 12-12-83, which provides general design criteria for use in the acquisition of DOE facilities and establishes responsibilities and authorities for the development and maintenance of these criteria.

f. Volume 43 FR 4377, "Radiation Protection Guidance to Federal Agencies for Diagnostic X-Rays," of 2-1-78.

6. DEFINITIONS.

a. Occupational Medical Program. A program to:

(1) Assure the health and safety of employees in their work environments through the application of occupational medical principles.

(2) Determine the physical and mental fitness of employees to perform job assignments without undue hazard to themselves, fellow employees, or the public at large.

(3) Assure the early detection and treatment of employee illness or injuries by means of scheduled periodic health evaluations and unscheduled employee health visits.

(4) Contribute to the maintenance of good employee health through the application of preventive medical measures, such as immunizations, alcohol and drug abuse programs, and health counseling.

b. Occupational Medicine. A specialty branch of the profession of medicine that deals with the health protection and health maintenance of employees, with special reference to job hazards, job stresses, and work environment hazards.

c. Minimum Requirements and Standards. The program content necessary to satisfy the policies and objectives of this directive.

d. Guidance. Information to assist in achieving the program policies and objectives.

e. Triage. The medical screening of patients to determine their priority for treatment; the separation of a large number of casualties in military or civilian disaster medical care into three groups:

(1) Those who cannot be expected to survive even with treatment;

(2) Those who will recover without treatment; and

(3) The priority group of those who need treatment in order to survive.

7. PROGRAM REQUIREMENTS.

a. Contractor Occupational Medical Program. The minimum requirements outlined below are not to be cited as justification for reducing existing or proposed occupational medical program activities, particularly those determined to be necessary by the periodic program appraisal process or to adequately meet specific occupational conditions.

(1) Medical Program Plan. The Occupational Medical Director for each contractor installation shall develop a written occupational medical plan detailing the methods and procedures to be used in establishing and operating the occupational medical program.

(2) Maintenance of a Healthful Work Environment. Close cooperation and coordination with health physics, industrial hygiene, and safety organizations will optimize the maintenance of healthful work environments.

(a) Minimum Requirements.

1 Occupational medical physicians shall perform periodic visits to worksites and facilities to become familiar with employee job tasks, worksite environments, and related health hazards or potential health hazards. Such visits should be coordinated with industrial hygiene, health physics, toxicology, paramedical, and safety personnel. Periodic visits should include a review of materials, processes, and procedures used, with emphasis on physical, chemical, and biological hazards. The knowledge gained may form the basis for recommendations to management for corrective action or preventive measures.

2 The frequency of periodic worksite visits by the physicians shall be determined by the Occupational Medical Director, taking into account such factors as plant and work force size; number of different operations; kinds and amounts of

physical, chemical, or biological agents used; the accident and incident rate; the occupational illness and disability rate; and the occupational medical department staffing.

3 The plant manager shall provide an effective management mechanism to furnish the Occupational Medical Director with full and timely information on all new physical, chemical, and biological agents and new processes introduced onto the worksites.

(b) Guidelines. WAS the Medical Director Informed (AND How is He) of cut of spc. plutonium

1 It is suggested that individual physicians make a familiarization visit to one or more worksites at least monthly. Where there is more than one occupational medical physician, they can alternate their worksite visits and keep each other updated on significant health and safety information.

At what Time was He Informed

2 It is suggested that occupational medical physicians participate in new materials and processes, review committees, safety committees, and other such activities.

(3) Minimum Requirements for Employee Health Examinations.

(a) Preplacement Examinations.

1 Examinations to determine the health status and the physical fitness of the individual in order to aid in suitable job placement that will not present a health hazard or accident risk to self, his or her fellow workers, the plant facilities or site, the public at large, or the general environment.

2 Complete examinations shall be done at the time of employment or reemployment. In the case of a job change, the plant management shall advise the Occupational Medical Director, who will determine the need for, and extent of, a review of the health status and physical fitness of the employees, with emphasis on the health and physical factors that relate to the new job tasks and demands.

(b) Periodic Health Examinations.

1 Objective. The objective of periodic health examinations is to provide continuing, updated reassessments of the health status and physical fitness of employees in order to:

a Detect any evidence of illness or injury, and determine whether or not there is an occupational relationship.

b Determine whether the employees' health status and physical fitness continue to be compatible with the safe performance of their assigned job tasks.

c Contribute to employee health maintenance by providing the opportunity for early detection, treatment, and prevention of disease or injuries and the complications or consequences of such diseases or injuries.

d Provide a documented record of the health status of employees.

Examination is [illegible] specific work hazards.

2 Minimum Requirements for Periodic Examinations. The following are minimum requirements. However, it should be recognized that specific work hazards and conditions may dictate more frequent health examinations in order to maintain an effective occupational medical program.

a All employees age 45 and over shall be offered a comprehensive health examination annually. The scope of the comprehensive health examination is outlined in subparagraph 7a(4) below.

b All employees under age 45 shall be offered a comprehensive health examination biennially.

3 Guidelines for Periodic Examinations. As a guide to strengthening the preventive medical aspects of the occupational medical program, it is suggested that all employees under age 45 be offered a brief interim health status examination biennially on alternate years to the required comprehensive health examination. The scope of the suggested interim health status examination is outlined in subparagraph 7a(5) below.

Why be [illegible]
Termination
Status to Get
Special attention
on Known Exposures

(c) Minimum Requirements for Termination Health Examinations. A health status review shall be made for all terminating employees. The extent of such a review shall be determined by the Occupational Medical Director, taking into account such factors as the length of time since the last comprehensive health examination and the employees' work and exposure histories. For employees with known occupational illnesses or injuries, or with known exposures and for those employed in potentially hazardous work areas, a comprehensive health examination (as outlined in subparagraph 7a(4) below) shall be done if more than 1 year has elapsed since the last comprehensive examination. Physical evidence of internal or external effects of hazardous physical, chemical, or biological agents, including effects of exposure to any internal or external ionizing radiation, shall be given special attention.

(d) Minimum Requirements for Return to Work Health Examinations.

I was not
Given
a written
clearance
To Return to
work

1 Occupational Injury or Illness. All employees with occupationally related injury or illness shall be examined without undue delay, whether or not disability or lost time is involved. The scope and content of this examination shall be determined by the examining occupational medical physician, based upon the nature and extent of the injury or disease, and shall be sufficient to ensure that the employee may return to work without undue health hazard or accident risk to himself or others. Written clearance from the occupational medical department shall be required before such an employee may return to work.

2 Nonoccupational Injury or Illness. Employees who have been absent from work because of nonoccupationally related illness or injury for 7 consecutive calendar days or more shall not be allowed to return to work until they receive a health evaluation and a written clearance from the occupational medical department. The extent of this health evaluation shall be as determined by the Occupational Medical Director and shall be sufficient to ensure that the employee may return to work without undue health hazard or accident risk to self or others.

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[illegible] of
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(e) Special Health Examinations and Health Monitoring. Standards and requirements for special health examinations and health monitoring for employees who work in jobs involving specific physical, chemical, or biological hazards, or specific stressful work environments will be developed and published in the directives system.

(4) Minimum Scope and Content of the Comprehensive Health Examination.

(a) The comprehensive health examination shall be conducted by an occupational medical physician using whatever ancillary assistance is needed.

(b) The scope and content of the comprehensive health examination shall be in accordance with current sound and acceptable medical practices.

1 Medical History. The medical history shall include the present illness or health status and review of symptoms, past medical history, present and past occupational hazards exposure, family history, allergy history, habits, travel history, and history of mental or emotional disorders.

2 Physical Examination. The physical examination shall be complete and cover head, neck, eyes, ears, nose, throat, mouth, heart, lungs, breasts, abdomen, vascular and lymphatic systems, skin, musculoskeletal system, a brief neurological examination, height, weight, pulse, temperature, and blood pressure. A digital rectal and prostate examination shall be offered to males age 40 and above. Examinations such as sigmoidoscopic, tonometric, and pelvic (and Pap smears) shall be offered or advised when indicated or required to conform to good preventive medical practices. Where the local capability does not exist to perform these specialized kinds of examinations, the employee shall be advised to obtain the examination from the private medical sector.

3 Laboratory Studies. The laboratory work shall include audiometry, visual acuity, (near, distant, and color vision), pulmonary function tests, x-rays when clinically indicated (see guidelines below), resting electrocardiogram, complete blood count, a blood glucose challenge test or a glucose tolerance test (unless clinically contraindicated), serology, urinalysis, serum lipids when indicated, tuberculin skin tests when indicated, and any other laboratory tests deemed necessary or desirable by the examining occupational medical physician.

4 Guidelines for Use of X-Rays. The recommendations and guidance contained in 43 FR 4377, of 2-1-78, shall be observed.

5 Review and Evaluation of Examination. The examining physician shall discuss findings with the employee and provide any necessary health counseling and advice. Emphasis should be placed upon the evaluation of employees' physical fitness and health status as they relate to the work environment and job safety, and to health maintenance and prevention of disease or the complications of disease. This evaluation should include a general assessment of the employees' emotional stability and mental health. Employees shall be encouraged to have private physicians, and should be referred to private physicians for any necessary definitive care or followup treatment and for any necessary additional diagnostic studies that are beyond the scope of the occupational health examination. The health interests of employees are best served by communication and cooperation between their private physicians and physicians participating in occupational health programs. This practice helps to assure their continuation in, or prompt restoration to, suitable employment.

I was not
Evaluated on
A Basis of
A Examination
Pertaining to
The Intake
of plutonium.

(5) Guides for the Interim Health Status Examination. The interim health examination may be conducted by a nurse or by paramedical personnel designated by the Occupational Medical Director under his or her direction and supervision, and may include the following:

(a) Medical History. A review may be done to elicit a history of illnesses, symptoms, or health complaints occurring in the interval since the last comprehensive health examination. This medical history review may be simplified so that it can be self-administered by the employees or administered by a nurse or paramedical personnel. Computerized techniques may be employed.

(b) Physical Examination and Laboratory Studies. The interim health examination may include height, weight, temperature, pulse, blood pressure, audiogram, visual acuity, pulmonary function tests, hemoglobin determination, urinalysis, and tuberculin skin test. Electrocardiograms may be done if ordered by the occupational medical physician. The provisions of subparagraph 7(4)(b)4 shall apply to the use of x-rays.

(c) Review and Evaluation of Interim Examination.

1 In the case of employees with abnormal interval history, or physical or laboratory findings, the examining nurse or paramedic shall consult with the occupational medical physician who will determine the need for further evaluation.

2 In the case of a negative interim review, the examining physician, nurse, or paramedic shall inform employees accordingly.

b. Minimum Requirements for Diagnosis and Treatment of Injury or Disease.

(1) Occupational Injury or Disease.

(a) Diagnosis and treatment of occupational injury or disease shall be prompt, with emphasis placed on rehabilitation and return to work at the earliest possible time compatible with job safety and employees' health.

Why was it not prompt?

(b) When it is necessary to refer employees to a private physician (for example, specialist consultation or treatment or in-hospital treatment), the occupational medical physician shall maintain close cooperation with the private physician. The occupational medical physician, being knowledgeable of employees' job duties and related hazards, shall determine the physical and mental fitness of employees to return to either full duties or limited duty status.

(c) It is the responsibility of plant managers to establish procedures to assure that all employees with occupational injury or disease receive formal (written) clearance from the occupational medical department before being permitted to return to work.

Why was I not Give written Clearance

(d) The responsible health and safety group (health physics, industrial hygiene, safety), shall be given timely notification of any unhealthy work situations detected by the occupational medical program.

was Thy Timely notifide

(2) Nonoccupational Injury and Illness. Employees shall be encouraged to utilize the services of a private physician or medical service where these are available for care of off-the-job illnesses or injuries. Treatment of nonoccupational injury and illness has never been and is not now ordinarily considered to be a routine responsibility of an occupational medical program with these limited exceptions:

(a) In emergencies, employees shall be given the attention required to prevent loss of life or limb or to relieve suffering until placed under the care of a private physician.

(b) For minor disorders, first aid or palliative treatment may be given if the condition is one for which the employee would not reasonably be expected to seek the attention of a private physician, or to enable the employee to complete a current work shift.

c. Minimum Requirements for Employee Health Maintenance and Preventive Medical Activities.

(1) Health Education and Counseling.

(a) The availability of occupational medical personnel for health counseling and education activities is essential to the effectiveness of an occupational medical program and shall be taken into consideration in the planning for adequate occupational medical personnel staffing. Health counseling shall include areas of weight control, nutrition, mental hygiene, smoking, drugs and alcohol, when indicated, and to the extent that such counseling can be done by the physicians, nurses or other qualified health professionals on the job. The extent of definitive treatment and indepth or followup counseling for physical, emotional, or mental problems shall be as determined by the Occupational Medical Director.

(b) Occupational medical education and counseling activities shall be coordinated with other health and safety organizations and with plant management in providing health and safety information to employees (e.g., habits of cleanliness, orderliness, safety, the proper use and maintenance of protective clothing and equipment, and the use of available health services and facilities).

(2) Immunization Programs.

(a) Tetanus immunization shall be available.

(b) Employees involved in foreign travel shall be advised to obtain the immunizations required by the Center for Disease Control and the Public Health Service of the U.S. Department of Health and Human Services. Special immunization requirements, such as serial desensitizations for allergy, may be given at the discretion of the Occupational Medical Director with the written advice and consent of the employees' private attending physicians, and in the interest of saving lost time off the job.

(3) Fitness for Continued Work Assignment. On all visits by employees to the occupational medical department, including visits for minor first aid or health counseling, the occupational medical physician or nurse shall give due consideration to the employees' job duties, the possible occupational relationships of the health complaints, and the employees' continuing fitness to safely perform job duties.

d. Minimum Requirements for Medical Records.

(1) Records Maintenance. The maintenance of complete medical records developed by the medical department for each employee from the time of the first examination or treatment is a basic requirement.

(2) Confidentiality. The confidential character of all employee medical records, including the results of health examinations, shall be rigidly observed by all members of the occupational medical staff. Such records shall remain in the exclusive custody or control of the occupational medical department. Disclosure of information from an employee's health records shall not be made without his or her consent, except as permitted by law.

(3) Updating of Records. Summary data shall be added to update employees' medical records at the time of each scheduled health examination, or unscheduled health visit, covering the following:

(a) The current health status of the employees. Particular note should be made of the development or progress of any disease process or injury occurring since the last examination or visit, as well as the employees' sick leave or disability history.

(b) Any hazardous or potentially hazardous physical, chemical, or biological agents at the employees' worksites.

(c) The employees' history of exposure to any physical, chemical, or biological agents.

(d) The employees' accident records.

(4) Identification of Medical Records. It shall be the responsibility of the Occupational Medical Director to see that all employee medical records are coded, flagged, or otherwise identified so that occupational medical personnel will be aware of related work hazards or potential hazards and be in a position to evaluate the possible relationship of such hazards to the employees' state of health. Forms used for routine sick call and emergency visits are included in this requirement.

(5) Specific Records Requirements.

(a) Records shall be retained on any disability or death related to an occupational injury or disease in accordance with DOE 5484.1. State workmen's compensation record requirements and the requirements of DOE 1324.2 shall be met.

(b) A personal health record shall be maintained for each employee and identified by name, date of birth, and social security number. The contractor may use additional identification systems as desired.

(c) All employee health records shall be retained in accordance with DOE 1324.2, which allows microfilming of the files and destruction of paper records.

(6) Disposition of Noncurrent Records. All employee health records shall be retained in accordance with DOE 1324.2. However, noncurrent records shall be retired to low-cost storage in an onsite records holding area or a Federal Records Center. To protect the confidentiality of the records, the shipping cartons shall be sealed, and the transfer documents shall note that access to the records is limited to personnel of the medical department. Alternately, if resources permit, the files may be microfilmed and the paper records destroyed.

e. Minimum Requirements for Emergency and Disaster Preparedness.

(1) Integrated Emergency and Disaster Preparedness Planning. The Occupational Medical Director is responsible for the development of a

medical emergency and disaster plan adequate to the needs of the plant and site. This plan shall be closely integrated with, and made a part of, the overall plant and site emergency and disaster preparedness plan, in accordance with DOE 5500.1A. This will require close coordination and cooperation with management, safety organizations, fire and rescue units, health physics, and industrial hygiene departments.

(2) Integration with Community Energency and Disaster Plans. The occupational medical emergency and disaster plan shall also be integrated with surrounding community emergency and disaster plans to the extent feasible consistent with the development of a maximum mutual aid and assistance capability.

(3) Preplanning Requirements.

(a) The medical emergency and disaster response capability shall be adequate to meet the kinds and degrees of accidents and trauma dictated by the character and history of plant operations and conditions.

(b) Preplanning and prearrangements are key factors vital to the effectiveness of a medical emergency and disaster plan and shall be accomplished to provide the following:

1 The services of health physicists to evaluate any associated radiological hazards or potential hazards affecting either the environment, the casualties, or the general public; and advice to rescue and medical personnel of any radiological hazards or potential hazards and assist them in the decision-making process.

2 Onsite capabilities for first-aid, triage, and personnel decontamination by trained, qualified personnel. This shall include onsite capability for cardiorespiratory resuscitation, including cardiac defibrillation.

3 Arrangements for hospital care for contractor personnel and for Department of Energy personnel for whom the contractor provides health services. This shall include capabilities for evaluation and treatment of injuries, radiation exposures, internal and external radioactive decontamination, radioactively or chemically contaminated injuries, and internal deposition or effects of toxic agents, as needed.

4 The services of medical specialists and consultants.

5 The services of rescue squads, ambulances, and helicopters, as needed, with capability for handling radioactively contaminated casualities. Ambulance drivers and attendants shall meet the U.S. Department of Transportation Guides or State requirements as appropriate.

6 First aid coverage during evacuation operations from facilities and the site.

7 Communication links between first aid and triage teams, fire and rescue units, hospitals, and hospital teams, local and State police, and the Emergency Operating Center. (See DOE 5500.1A.)

(4) Recommended Guide. A recommended guide to emergency and disaster planning is the 30-minute film, "Date with Disaster," produced by the Office of Preparedness of the General Services Administration. This film is available through the Medical Director (EH-30.1).

f. Minimum Requirements and Guidelines for Organization and Staffing for Contractor Occupational Medical Programs.

(1) The Occupational Medical Director.

(a) Shall be a physician who is a graduate of an accredited school of medicine or osteopathy and who meets the licensing requirements applicable to the location in which he or she works. Training and experience in occupational medicine are desirable.

(b) Shall be responsible for the development, interpretation, implementation, and administration of the occupational medical program.

(c) Shall report at a senior management level to assure program effectiveness. In the areas of safety, health protection, health maintenance, maintenance of a healthy work environment, and accident prevention, occupational medicine plays a vital role, which involves all work disciplines, and cuts across all levels of management and labor. Thus, it is essential to the success and effectiveness of the occupational medical program that the Occupational Medical Director have direct access to top management so as to keep it fully informed on a timely basis, and that top management exercise an active interest in the program and provide adequate support.

(d) Shall be afforded opportunities for continuing medical education, including attendance at professional medical meetings, health seminars, and subscriptions to medical journals.

(2) Occupational Medical Physicians.

(a) Shall be graduates of accredited schools of medicine or osteopathy and meet the licensing requirements applicable to locations in which they work. Training and experience in occupational medicine are desirable.

(b) Shall be directly responsible to the Occupational Medical Director.

(c) Shall be afforded opportunities for continuing medical education, including attendance at professional medical meetings, health seminars, and subscriptions to medical journals.

(3) Occupational Medical Nurses.

(a) Shall be graduates of accredited schools of nursing, registered, and legally qualified to practice nursing where employed. Training and experience in occupational health are desirable.

(b) Shall be afforded opportunities for continuing nursing education, including attendance at professional meetings and subscriptions to journals as determined by the Occupational Medical Director.

(4) Professional Staffing.

(a) The proper ratio of physicians and nurses to employee population is related to many factors including:

1 Size of employee population;

2 Geographical distribution and location of employees;

3 Shifts worked;

4 Rate of employee turnover;

5 Age and sex distribution of the employee population;

6 Extent of occupational hazards; ARE They Aware of potential hazards/exposure

7 Types and complexities of job tasks and operations performed;

8 Total number of health examinations required;

9 Degree of isolation of worksites from community and other medical services;

10 Degree of accessibility of the occupational health services to the employee; and

11 Degree of employee utilization of occupational health services.

(b) Guide for Physician Staffing.

1 At least one part-time physician for employee populations less than 1000;

2 One full-time physician for employee populations over 1000 and under 1500;

3 One full-time and one half-time physician for employee populations over 1500 but under 2000;

4 Two full-time physicians for employee populations over 2000 but under 3000; and

5 An additional physician for each additional increase of 1000 to 1500 employees.

(c) Guide for Nurse Staffing.

1 One part-time nurse for up to 100 employees;

2 One full-time nurse for employee populations over 100 and up to 300;

3 Three full-time nurses for the first 1000 employees;

4 One additional full-time nurse for each additional 1000 employees up to 5000; and

5 One additional full-time nurse for each 2000 employees over 5000.

(d) Minimum Requirements for Worksites not Covered by a Physician or Nurse. At worksites where the size of the employee population does not warrant a full-time nurse or physician (i.e., a population of less than 100 employees) there shall be at least one employee on duty who is trained and currently qualified in first aid. To assure that this requirement is met, the contractor shall have a sufficient number of employees trained and currently qualified in first-aid and shall establish a management system of employee work scheduling that will assure that at least one such qualified employee is on duty for all shifts.

(e) Guide for Laboratory Technician and Ancillary Medical Staffing. The number and qualification of laboratory and other technicians and ancillary medical personnel required shall be as determined by the Occupational Medical Director. The number of clinical and support personnel should be adequate to support the needs of the occupational medical program. (The continuing increase in reporting requirements promulgated under the Occupational Safety and Health Administration make this particularly important.)

g. Minimum Requirements for Facilities and Equipment.

(1) Occupational Medical Facilities. General design criteria for occupational medical facilities are contained in DOE 6430.1. These facilities:

(a) Shall be located in areas readily accessible to employees and to transportation. Accessibility of the occupational medical department is a key factor in employee utilization of medical services and is very important to the overall effectiveness of the program.

(b) Shall be sufficiently spacious, well lighted, ventilated, and heated.

(c) Shall include waiting, consultation, examining and treatment rooms, toilet, and shower or tub facilities adequate to assure privacy and comfort.

(d) Shall have necessary medical, laboratory, and other equipment and adequate decontamination facilities as needed.

(e) Shall include a rest or recovery room, dressing rooms, and facilities for the laboratory and radiological examinations performed in the department.

(f) Shall include ambulance services and equipment that meet U.S. Public Health Service and Department of Transportation standards. The responsibility for ambulance and rescue personnel, operations, and equipment need not necessarily be assigned to the Occupational Medical Director.

(2) Equipment.

(a) The Occupational Medical Director shall assure that the medical department equipment is adequate in terms of present day accepted standards of medical practice and that it is maintained in good working order.

(b) The selection of specific kinds and brands of medical office and laboratory equipment shall be as determined by the Occupational Medical Director. The following minimum items should be included:

1 Standard distant and near visual acuity eye charts or optical testers.

2 Standard color vision plates (Ishihara, Dvorine, or American Optical).

3 Audiometer with audiometer booth.

4 Electrocardiograph machine.

5 Pulmonary function equipment sufficient to measure total vital capacity, timed vital capacity (FEV-1), and maximum voluntary ventilation. (As a guide, consideration should be given to a small solid-state machine with capability for instant computer readouts of these parameters.)

6 Cardiac defibrillation and related monitoring equipment adequate for portable use or use without power.

7 Suction equipment, including manually operated suction equipment for portable use or use without power.

8 Pulmonary resuscitation equipment.

9 Adequate equipment for monitoring, handling, and decontamination of radioactively contaminated casualties and chemically contaminated casualties, as needed.

10 Physiotherapy equipment, as needed.

BY ORDER OF THE SECRETARY OF ENERGY

LAWRENCE F. DAVENPORT
Assistant Secretary
Management and Administration

Mechley, Robbins & Kelly Co., L. P. A.
ATTORNEYS AND COUNSELORS AT LAW

BRADEN A. MECHLEY
FREDRIC J. ROBBINS*
JAMES M. KELLY
MARK C. PATTERSON
JACK L. TUCKER**

RICHARD NURRE
FREDERIC L. GOEDDEL
THOMAS M. GAIER
RANDY J. BLANKENSHIP**
RICHARD B. UHLE, JR.

SECOND NATIONAL BUILDING
832 MAIN STREET
CINCINNATI, OHIO 45202-1394

(513) 721-3330
TELECOPIER EXT. 120

*ALSO ADMITTED IN FLORIDA
**ALSO ADMITTED IN KENTUCKY

March 28, 1988

Mr. Robert J. Casey
1872 Sunset Avenue
Apartment 3
Cincinnati, Ohio 45238

Dear Mr. Casey:

Re: Potential Claim - Fernald

Please find the enclosed medical authorization. I have enclosed three authorizations for you to sign and return to me.

I have a letter ready to send to Dr. Middaugh as soon as I receive the signed authorizations back from you.

As soon as I receive a report or any information from Dr. Middaugh, I will let you know how we will proceed. As we discussed, it will be impossible for us to make a judgment until we learn what type of medical evidence is available.

Please call if you have any questions.

Very truly yours,

MECHLEY, ROBBINS & KELLY CO., L.P.A.

Richard B. Uhle Jr.

Richard B. Uhle, Jr.

klp/1022a

Enclosures

FERNALD ATOMIC TRADES & LABOR COUNCIL
SAFETY COMMITTEE
Affiliated with The A. F. of L. - C. I. O.

August 31, 1988

To: All Local and International Unions represented by F.A.T.L.C.
From: Fernald Atomic Trades and Labor Council
Subject: F.A.T.L.C. members exposed to Plutonium

This communication is to inform all Local and International Unions represented by the Fernald Atomic Trades and Labor Council that eight members of this council have tested positive for the presence of plutonium in their systems by urinalysis.

We would also like to solicit the resources and knowledge of all International Health and Safety organizations. If any Local or International Unions have input on the following member concerns, please pass the information along to us.

1) "WHAT POSSIBLE HEALTH EFFECTS CAN I EXPECT TO INCUR FROM PLUTONIUM CONTAMINATION?"

2) "ARE THERE EXPERTS WHO ARE ABLE TO HELP ME UNDERSTAND WHAT THIS EXPOSURE MEANS, WHO ARE NOT BIASED BY DEPARTMENT OF ENERGY AFFILIATIONS?"

3) "SHOULD I SUBMIT SAMPLES FOR PRIVATE ANALYSIS? IF SO, WHERE? AND WHO IS RESPONSIBLE FOR THE COSTS?"

4) "HOW CAN I GATHER THE PROPER DOCUMENTATION NOW, SO THAT I CAN PROVE MY CASE LATER, SHOULD I BECOME ILL DUE TO THIS EXPOSURE?"

FRATERNALLY,

John J. Fitzgerald

JOHN J. FITZGERALD,
FATLC SAFETY CHAIRMAN
9437 Harrison Ave.
Cleves, Ohio 45002

FERNALD ATOMIC TRADES & LABOR COUNCIL
Affiliated with The A. F. of L. - C. I. O.

SAFETY COMMITTEE

8/12/88

SUBJECT: POOS PROJECT CLOSE OUT URINALYSIS.

TO: STUWARD HINNEFELD

FROM: JOHN J FITZGERALD

The following is a listing of employees who were transfered from the Piolet Plant to plant #4 during the POOS run and may not have given their close out sampling for Plutonium.

RON BREWER
RUSS CHENAULT
JAMES CONNER
LLOYD DICK (LAID OFF)
BRIAN GREEN
RON HURLEY (EMPLOYED AT PIKETON)
JACK JOHNSON
ORR MOORE
WAYNE OWENS
JOHN TAYLOR
TROY STRODE
BECKY COLLINS
JIM SMITH
MICHAEL GRECCO (TERMINATED)

Please check your records to determine if sampling has been done on these employees .

THANK YOU

John J Fitzgerald
JOHN J. FITZGERALD
CHAIRMAN OF UNION SAFETY COMMITTEE

PERSONNAL AUTHORIZED TO ENTER THE PLANT 4 POOS OPERATION AREA

MAINTENANCE

Roger Barnes	0801
Kelly Jones	2409
Bob Tabor	1028
Jim Tapke	1397
George Burleson	1529
Mel Karnes	1142
Dennis Bass	1362
Bill Lemons	2772
Harold Davis	1661
Jim Ball	0835
John Marksberry	0816
Carrol Varns	1301
Bob Wilson	0831
Larry Caldwell	3060
Don Bastin	0317
Anthony Davis	0819
Roger Barnes	0801
Robert Fredrick	1105
Gary Blank	0889
Al Roberts	1498
Bill Miller	0731
Willard Wallen	0350
Mel Karnes	1142
Millard Singleton	1425
Otis Caudill	0998
Lee Callett	1784
Harry Easterling	1085
John Long	0811
Dan Socha	1166
John Carr	2998
Gary Stouder	3009
Don Gardner	1121
Mark Botos	2959
Jack Bierman	1775
Paul Reinhard	1080
Norm Harrison	0970
Don Burns	2992
Roger Biddle	1296
Robert Craig	2988
Frank Carte	1146
Robert Halley	1157
Thomas Knueven	1111
Joseph Metzler	0939
Howard Sherrett	0883
Stanley Willis	0803
Hoy Howard	1767
Harry Esterling	1085
Ahaoi Sitawi	1433
Paul Flynn	1133
Bud Lykins	0825
Tom Holtzclaw	3020
Bill Wright	0891
John Fisher	1298
Jim Anness	1400
Robert Roberts	1498
George Reigelsberger	1327

11/7/86

PERSONNEL AUTHORIZED TO ENTER THE PLANT 4 POOS OPERATION AREA

DAY SHIFT

PLANT 4 PERSONNEL

F. Campbell	1317 (2)
C. Jameson	878 (2)
R. Smith	1138
D. Zahner	1306
S. Maher	2498
D. Scott	903
E. Bishop	2172
R. Green	938
T. Richardson	1355
D. Minter	965
C. Heard	2246

PLANT 8 PERSONNEL

D. Penter	2965
K. Lewis	2989
G. Skinner	1696 (3)

PILOT PLANT PERSONNEL

T. Strode	2957
B. Green	972
R. Owens	2090
J. Conner	1250
L. Lindner	1761 (1)

AFTERNOON SHIFT

PLANT 4 PERSONNEL

M. Saylor	1587
D. Justice	2987
R. Bond	866
B. Sloan	1231
J. Baker	1619
J. Ryan	1344
W. Boback	2737
S. Lane	1795 (1)

PLANT 8 PERSONNEL

M. Perkins	2984
D. Hoffman	1226
R. McConnell	2925
M. Hoff	2986

PILOT PLANT PERSONNEL

L. Dick	1162
O. Moore	1178
R. Brewer	2782
R. Collins	2933

NIGHT SHIFT

PLANT 4 PERSONNEL

S. King	2406
P. Belton	2956 (1)
J. Preston	1123
S. Withrow	1004
P. Caldwell	1154
B. Darwish	1183
R. Brannan	1070 (1)
J. Maxwell	1214
R. Turner	1794

PLANT 8 PERSONNEL

C. Edwards	2921
W. Wood	3017
S. Lucier	1260

PILOT PLANT PERSONNEL

J. Smith	1199
D. Campbell	1179
R. Hurley	1013
J. Taylor	2978

(1) Extended sick leave - requires POOS refresher upon return
(2) Medically disqualified for POOS operations
(3) Returned to Plant 8 November 3, 1986

SUPERVISION

R. Bryan
G. Corliss
J. Erfman
D. Fosson
E. Henry
R. Hinerman (2)
R. Perkins
O. Pettit
K. Lanning

ENGINEERS

H. McDaniel
S. Vaaler

EDWARD SILBERSTEIN M.D.
M.L. 557
U.C. MEDICAL CENTER
CIN., OH. 45267

IF IN LUNG, IT WILL BE DETECTABLE FOR A LONG TIME.
DEMAND A WHOLE BODY COUNT.

AT JEWISH HOSP. 569-2291
AT VET. " 861-3100 EXT. 4231

HE THINKS LABS INDEPENDENT & RESULTS ARE GOOD, BUT THEY DO MAKE MISTAKES.
SAID HE WOULD CALL LAB & FIND OUT WHAT METHOD THEY USED TO ANALYZE.
HE THINKS BODY COUNTER AT WMCO WOULD GIVE DEPENDABLE RESULTS.

SC801

NLO, INC.

GRIEVANCE REPORT

(2nd. Step)

No. 10837

GRIEVANT'S NAME: THE REPRESENTITIVES OF THE UNION EXECUTIVE HEALTH AND SAFETY COMMITTEE

BADGE NO.: XXXXXX

SHIFT: ALL

PLANT: N/A

IMMEDIATE SUPERVISOR: N/A

DATE & TIME OF INCIDENT: (IF ANY)

DESCRIPTION OF INCIDENT OR COMPLAINT:

THE COMPANY HAS CONTRACTED A LABORATORY THAT IS PROVIDING QUESTIONABLE RESULTS ON SAMPLES THAT ARE SENT TO THEM FOR ANAYLSIS. THIS HAS CAUSED THE EFFECTED EMPLOYEES TO SOLICITE INDEPENDANT MEDICAL ADVISE FOR THEIR POTENTIAL JOB RELATED CONDITION.

ALLEGED CONTRACT VIOLATION:

ARTICLE I, SECTION 2. ARTICLE XI SECTION 1(A) (i). ARTICLE XI SECTION 1(A)(v). ARTICLE XI SECTION 6(B). AND ALL OTHER RELATED ARTICLES, SECTIONS, OR LAWS.

RELIEF OR ADJUSTMENT SOUGHT:

THAT THE COMPANY BE FINANCIALLY LIABLE FOR ANY AND ALL COSTS INCURRED BY THE EFFECTED MEMBERS IN CONNECTION WITH MEDICAL EXAMINATIONS OR ANAYLSIS BY AN INDEPENDANT PHYSICIAN OR TECHNICAL LABROTORY FOR PLUTONIUM EXPOSURE.

Signature ____________ (GRIEVANT) Date ____________ Signature ____________ (UNION STEWARD)

Grievance Presented To ____________ (FOREMAN – SUPERVISOR) Date ____________

REPLY BY DIVISION HEAD OR REPRESENTATIVE:

Reply Presented To ____________ (UNION STEWARD)

Signature ____________ (DIVISION HEAD OR REPRESENTATIVE)

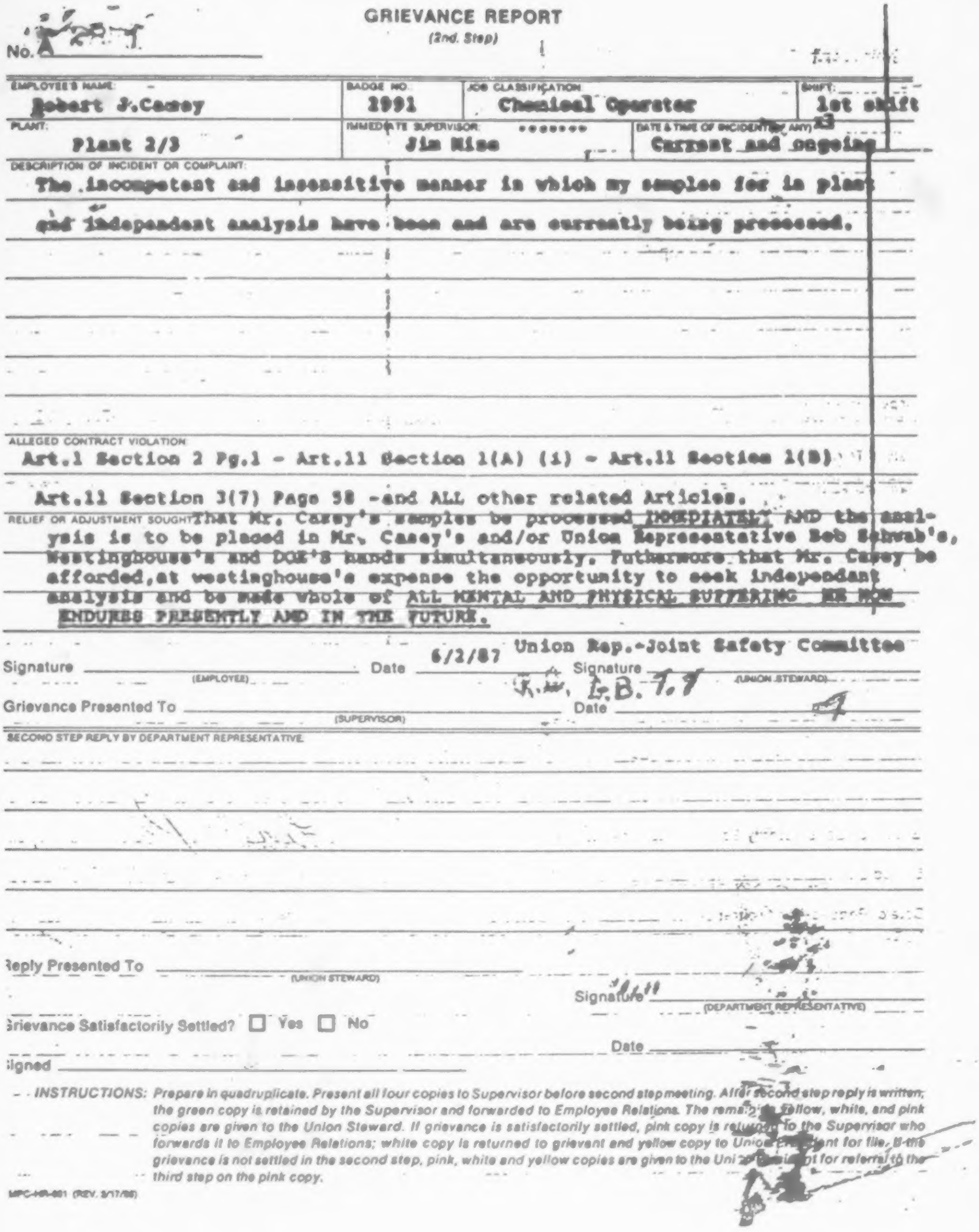
Grievance Satisfactorily Settled? ☐ Yes ☐ No

Date ____________

Signed ____________

INSTRUCTIONS: Prepare in quadruplicate. Pink and green copies are presented to immediate supervisor; white copy is retained by Union Steward; yellow copy is retained by aggrieved. After second step reply is written on pink and green copy; green copy is forwarded to Industrial Relations Division, and pink copy is presented to the Union Steward or aggrieved employee. If grievance is satisfactorily settled pink copy is returned to the supervisor who forwards to Industrial Relations Division. If grievance is not settled, pink copy is retained by the Union Steward. The Union appeals unsettled grievance on pink copy and submits to Industrial Relations Director

NLO-PER. 061 (REV. 10/26/65)



GRIEVANCE REPORT

(2nd. Step)

No.

EMPLOYEE'S NAME: Robert J.Casey

BADGE NO.: 1991

JOB CLASSIFICATION: Chemical Operator

SHIFT: 1st shift

PLANT: Plant 2/3

IMMEDIATE SUPERVISOR: Jim Wise

DATE & TIME OF INCIDENT (IF ANY): Current and ongoing

DESCRIPTION OF INCIDENT OR COMPLAINT: The incompetent and insensitive manner in which my samples for in plant and independent analysis have been and are currently being processed.

ALLEGED CONTRACT VIOLATION: Art.1 Section 2 Pg.1 - Art.11 Section 1(A) (1) - Art.11 Section 1(B)

Art.11 Section 3(7) Page 58 -and ALL other related Articles.

RELIEF OR ADJUSTMENT SOUGHT: That Mr. Casey's samples be processed IMMEDIATELY AND the analysis is to be placed in Mr. Casey's and/or Union Representative Bob Schwab's, Westinghouse's and DOE'S hands simultaneously. Futhermore that Mr. Casey be afforded,at westinghouse's expense the opportunity to seek independant analysis and be made whole of ALL MENTAL AND PHYSICAL SUFFERING HE NOW ENDURES PRESENTLY AND IN THE FUTURE.

Signature ______ (EMPLOYEE) Date 6/2/87

Union Rep.-Joint Safety Committee

Signature ______ (UNION STEWARD)

Grievance Presented To ______ (SUPERVISOR) Date ______

SECOND STEP REPLY BY DEPARTMENT REPRESENTATIVE

Reply Presented To ______ (UNION STEWARD)

Signature ______ (DEPARTMENT REPRESENTATIVE)

Grievance Satisfactorily Settled? ☐ Yes ☐ No

Date ______

Signed ______

INSTRUCTIONS: Prepare in quadruplicate. Present all four copies to Supervisor before second step meeting. After second step reply is written, the green copy is retained by the Supervisor and forwarded to Employee Relations. The remaining yellow, white, and pink copies are given to the Union Steward. If grievance is satisfactorily settled, pink copy is returned to the Supervisor who forwards it to Employee Relations; white copy is returned to grievent and yellow copy to Union President for file. If the grievance is not settled in the second step, pink, white and yellow copies are given to the Union President for referral to the third step on the pink copy.

MPC-HR-001 (REV. 3/17/86)

GRIEVANCE REPORT
(3rd. Step)

No. A 2851

NOTICE OF APPEAL TO THIRD STEP: (UNION GRIEVANCE COMMITTEE)

Expedited to third step in accordance with Article XI. Section 3(7).

Signed ______ (CHAIRMAN, UNION GRIEVANCE COMMITTEE)

Appeal Presented To ______ Date June 3, 1987

Date of Third Step Meeting June 15, 1987

THIRD STEP REPLY: (HUMAN RESOURCES DEPARTMENT REPRESENTATIVE)

See attached statement for third steo answer.

Grievance Satisfactorily Settled? ☐ Yes ☐ No

Signed ______ (HUMAN RESOURCES DEPARTMENT REPRESENTATIVE)

Signed ______ (CHAIRMAN, UNION GRIEVANCE COMMITTEE)

Reply Presented to Union Grievance Committee June 22, 1987 (DATE)

Date of Request for Arbitration ______

Date of Arbitration Meeting ______

REMARKS:

GRIEVANT NAME: Robert J. Casey

GRIEVANCE NO: 2851

In response to your request for a third step answer to the above mentioned grievance, Mr. Casey's January sample was a pre-POOS sample. It was not expected that a positive result would show. When the Company received the positive result, Mr. Casey was removed from the production area and subsequent samples were taken.

The FMPC does not have the capability to process the samples so they were sent to U.S. Testing (as was the first sample). Unfortunately, there was a delay in sending the samples. The samples have been sent and the results should be available at the end of the month. The samples were not rushed so that the same analysis would be done on the second group as on the first.

One requested remedy is to have the results of the analysis sent to Mr. Casey, Bob Schwab and the Company simultaneously. The Company has no problem with this and will instruct U.S. Testing not to phone the Company with the results. The Company will need a signed release in order to make the findings available to Bob Schwab.

A second request was for independent analysis paid for by the Company. The Company does not believe this appropriate at this time.

Lisa G. Robinson

Lisa G. Robinson

EMPLOYEE'S NAME: Jesse Abney	BADGE NO.:	JOB CLASSIFICATION: Chemical Operator	SHIFT: 1st Shift
PLANT: Plant 1	IMMEDIATE SUPERVISOR: Jim Mize	DATE & TIME OF INCIDENT: (IF ANY) Current and ongoing	

DESCRIPTION OF INCIDENT OR COMPLAINT:

The incompetent and insensitive manner in which my samples for in plant and independent analyio have been and are currently Being processed.

ALLEGED CONTRACT VIOLATION:

Art. 1 Section 2 pg. 1, Art. 11 Section 1 A i Art. 11 Section 1 B Art.11 Section 3 ,7 page 58 andALL other related articles.

RELIEF OR ADJUSTMENT SOUGHT: Mr. Abney,s samples be processed IMMEDIATELY and the analysis is to be placed in Mr. Abney,s and or Union Representative Bob Schwab, Westinghouse, and DOE, hands simultaneously. Futhermore that Mr. Abney be afforded atWesthouse,s expence the opportunity to seek independant analysis and be made whole of ALL MENTAL AND PHYSICAL SUFFERING HE NOW ENDURES PRESENTLY AND IN THE FUTURE .

Signature Jesse G Abney (EMPLOYEE) Date 6/24/87 UNION REP. JOINT SAFETY COMMITTEE Signature R.S., C.B. T.T. D.D. C.A. (UNION STEWARD)

Grievance Presented To ______________________ (SUPERVISOR) Date ______________

SECOND STEP REPLY BY DEPARTMENT REPRESENTATIVE:

Reply Presented To ______________________ (UNION STEWARD)

Signature ______________________ (DEPARTMENT REPRESENTATIVE)

Grievance Satisfactorily Settled? ☐ Yes ☐ No

Date ______________

Signed ______________________

INSTRUCTIONS: Prepare in quadruplicate. Present all four copies to Supervisor before second step meeting. After second step reply is written, the green copy is retained by the Supervisor and forwarded to Employee Relations. The remaining yellow, white, and pink copies are given to the Union Steward. If grievance is satisfactorily settled, pink copy is returned to the Supervisor who forwards it to Employee Relations; white copy is returned to grievant and yellow copy to Union President for file. If the grievance is not settled in the second step, pink, white and yellow copies are given to the Union President for referral to the third step on the pink copy.

PMPC-HR-001 (REV. 3/17/80)

GRIEVANCE REPORT

(3rd. Step)

No. A 2688

NOTICE OF APPEAL TO THIRD STEP (UNION GRIEVANCE COMMITTEE)

Signed Gene Branham
(CHAIRMAN, UNION GRIEVANCE COMMITTEE) 3

Appeal Presented To ______ Date June 24/87.

Date of Third Step Meeting July 7, 1987

THIRD STEP REPLY: (HUMAN RESOURCES DEPARTMENT REPRESENTATIVE)

See attached statement for third step answer.

Grievance Satisfactorily Settled? ☐ Yes ☒ No

Signed Lisa G. Robinson
(HUMAN RESOURCES DEPARTMENT REPRESENTATIVE)

Signed Gene Branham 7/10/87
(CHAIRMAN, UNION GRIEVANCE COMMITTEE)

Reply Presented to Union Grievance Committee July 8, 1987
(DATE)

Date of Request for Arbitration ______ Date of Arbitration Meeting ______

REMARKS:

20 387 700

FMPC-HR-881 (Reverse) (REV 3/17/86)

GRIEVANT NAME: Robert J. Casey

GRIEVANCE NO: 2851

In response to your request for a third step answer to the above mentioned grievance, Mr. Casey's January sample was a pre-POOS sample. It was not expected that a positive result would show. When the Company received the positive result, Mr. Casey was removed from the production area and subsequent samples were taken.

The FMPC does not have the capability to process the samples so they were sent to U.S. Testing (as was the first sample). Unfortunately, there was a delay in sending the samples. The samples have been sent and the results should be available at the end of the month. The samples were not rushed so that the same analysis would be done on the second group as on the first.

One requested remedy is to have the results of the analysis sent to Mr. Casey, Bob Schwab and the Company simultaneously. The Company has no problem with this and will instruct U.S. Testing not to phone the Company with the results. The Company will need a signed release in order to make the findings available to Bob Schwab.

A second request was for independent analysis paid for by the Company. The Company does not believe this appropriate at this time.

Lisa G. Robinson

Lisa G. Robinson

PLUTONIUM BIOASSAY RESULTS

L NAME	BADGE #	SAMPLE TYPE	SAMPLE DATE	RESULTS (DPM/SAMPLE)		TOTAL
				Pu-238	Pu-239/240	SAMPLE (ml)
CASEY	2991	URINE	08-Jan-87	1.00E-03	4.11E-02	8.00E+02
CASEY	2991	URINE	04-May-87	0.00E+00	-1.72E-03	8.57E+02
CASEY	2991	URINE	05-May-87	0.00E+00	0.00E+00	4.28E+02
CASEY	2991	FECAL	16-Jul-87	1.04E-01	3.56E-02	1.42E+02

This report is provided to Mr. Casey this date August 12, 1988 at his request.

Employee Signature ______________________

R. W. Keys

OSH Dosimetry & Instrumentation

Page 2
Received: 06/09/88

ITRSL Oak Ridge REPORT
Results by Sample

Work Order # 88-06-056

SAMPLE ID 963 D.MINTER FRACTION 01A TEST CODE SPEC NAME REQUESTED ANALYSES
Date & Time Collected 03/10/88 Category

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
PU-238 LLD=0.012	0.012	0.014	dpm/samp.
PU-239,240 LLD=0.012	0.112	0.046	dpm/samp.

SAMPLE VOLUME 1430 ml
ANALYZED BY LRM 6/24/88

SAMPLE ID 2988 R.CRAIG FRACTION 02A TEST CODE SPEC NAME REQUESTED ANALYSES
Date & Time Collected 04/11/88 Category

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
PU-238 LLD=0.016	0.016	0.018	dpm/samp.
PU-239,240 LLD=0.016	0.021	0.021	dpm/samp.

SAMPLE VOLUME 1400 ml
ANALYZED BY LRM 6/24/88

Page 3 ITRSL Oak Ridge REPORT Work Order # 88-06-056
Received: 06/09/88 Results by Sample

SAMPLE ID 1296 R. BIDDLE FRACTION 03A TEST CODE SPEC NAME REQUESTED ANALYSES
Date & Time Collected 04/11/88 Category

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
PU-238 LLD=0.014	0.019	0.019	dpm/samp.
PU-239,240 LLD=0.014	0.024	0.022	dpm/samp.

SAMPLE VOLUME 1340 ml
ANALYZED BY LRM 6/24/88

SAMPLE ID 803 S. WILLIS FRACTION 04A TEST CODE SPEC NAME REQUESTED ANALYSES
Date & Time Collected 04/12/88 Category

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
PU-238 LLD=0.014	0.023	0.021	dpm/samp.
PU-239,240 LLD=0.014	0.033	0.024	dpm/samp.

SAMPLE VOLUME 1400 ml
ANALYZED BY LRM 6/24/88

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Received: 06/09/88

ITRSL Oak Ridge REPORT
Results by Sample

Work Order # 88-06-056

SAMPLE ID 903 D.SCOTT FRACTION 05A TEST CODE SPEC NAME REQUESTED ANALYSES
Date & Time Collected 04/20/88 Category

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
PU-238 LLD=0.015	0.015	0.018	dpm/samp.
PU-239,240 LLD=0.015	0.116	0.005	dpm/samp.

SAMPLE VOLUME 1450 ml
ANALYZED BY LRM 6/24/88

SAMPLE ID 388 S.MAHER FRACTION 06A TEST CODE SPEC NAME REQUESTED ANALYSES
Date & Time Collected 04/19/88 Category

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
PU-238 LLD=0.014	0.014	0.016	dpm/samp.
PU-239,240 LLD=0.014	0.009	0.013	dpm/samp.

SAMPLE VOLUME 1410 ml
ANALYZED BY LRM 6/24/88

Page 3 ITRSL Oak Ridge REPORT Work Order # 88-06-036
Received: 06/09/88 Results by Sample

SAMPLE ID 2981 D.JUSTICE FRACTION 07A TEST CODE SPEC NAME REQUESTED ANALYSES
Date & Time Collected 04/20/88 Category

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
PU-238 LLD=0.015	0.000	0.009	dpm/samp.
PU-239,240 LLD=0.015	0.010	0.015	dpm/samp.

SAMPLE VOLUME 1000 ml
ANALYZED BY LRM 6/24/88

SAMPLE ID 1111 T.KNUEVEN FRACTION 08A TEST CODE SPEC NAME REQUESTED ANALYSES
Date & Time Collected 04/22/88 Category

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
PU-238 LLD=0.016	0.016	0.19	dpm/samp.
PU-239,240 LLD=0.016	0.011	0.016	dpm/samp.

SAMPLE VOLUME 1470 ml
ANALYZED BY LRM 6/24/88

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Received: 06/09/88

ITRSL Oak Ridge REPORT
Results by Sample

Work Order # 88-06-056

SAMPLE ID 1306 D. ZAHNER FRACTION 09A TEST CODE SPEC NAME REQUESTED ANALYSES
Date & Time Collected 04/2[illegible]/88 Category

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
PU-238 LLD=0.015	0.030	0.024	dpm/samp.
PU-239,240 LLD=0.015	0.075	0.039	dpm/samp.

SAMPLE VOLUME 1465 ml
ANALYZED BY LRM 6/24/88

SAMPLE ID 2020 T. HOLTZCLAW FRACTION 10A TEST CODE SPEC NAME REQUESTED ANALYSES
Date & Time Collected 05/02/88 Category

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
PU-238 LLD=0.015	0.030	0.024	dpm/samp.
PU-239,240 LLD=0.015	0.066	0.036	dpm/samp.

SAMPLE VOLUME 1300 ml
ANALYZED BY LRM 6/24/88

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Received: 06/09/88

ITRSL Oak Ridge REPORT
Results by Sample

Work Order # 88-06-056

SAMPLE ID 1167 C. RIEDE FRACTION 11A TEST CODE SPEC NAME REQUESTED ANALYSES
Date & Time Collected not specified Category

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
PU-238 LLD=0.012	0.029	0.022	dpm/samp.
PU-239,240 LLD=0.012	0.046	0.029	dpm/samp.

SAMPLE VOLUME 1310 ml
ANALYZED BY LRM 6/24/88

Ohio Medical Claims Service Bureau
P.O. Box 387, Loveland, Ohio 45140 (513) 489-1573

September 1, 1988

Robert Casey
944 Summit Avenue
Cincinnati, Ohio 45205

Dear Mr. Casey:

Attached please find your statement of account with Dr. Kelly that has been mailed to you for the past several months. As of this date, we have not received your payment of this account nor have we been contacted by you in setting up a payment schedule for this account.

Due to the above, we are forced at this time to ask you to remit payment in full within the next 10 days or we will have no choice in turning this matter over to an agency that will use means of collecting this account to the full extent of the law.

If you have any questions concerning the enclosed statement, please contact us immediately.

Sincerely,

Linda Skirvin
Linda Skirvin,
Director

LS/mh
Enclosure: Itemized Statement

Medical Bills Processing and Consultation Service

DOE Form 5480.4
(7-82)

U.S. DEPARTMENT OF ENERGY
CONTRACTOR EMPLOYEE
OCCUPATIONAL SAFETY OR HEALTH COMPLAINT

This form is provided for the assistance of any DOE contractor employee or representative thereof who (1)believes that a violation of a DOE safety or health standard exists and (2)desires to file a complaint. It is not intended to constitute the exclusive means by which a complaint may be registered with the contractor or with the DOE.

1.A. THE UNDERSIGNED BELIEVES THAT A VIOLATION OF A DOE OCCUPATIONAL SAFETY OR HEALTH STANDARD EXISTS AT THE PLACES OF EMPLOYMENT INDICATED BELOW, RESULTING IN A JOB SAFETY OR HEALTH HAZARD TO EMPLOYEES.

(Check One)
☒ Employee ☐ Representative of employees ☐ Other (Specify) ________

B. DOES THE HAZARD(S) IMMEDIATELY THREATEN DEATH OR SERIOUS PHYSICAL HARM? ☒ YES ☐ NO

2. CONTRACTOR'S NAME WESTINGHOUSE	3. ADDRESS (Street, City, State, Zip Code) 7400 Willey Rd.	4. TELEPHONE NO. 738-6200

5. SPECIFY THE PARTICULAR BUILDING OR WORKSITE WHERE THE ALLEGED VIOLATION IS LOCATED, INCLUDING ADDRESS. FERNALD PLANT Ross, OHIO

6. KIND OF ACTIVITY Neglect of Safty Protection	7. NAME AND PHONE NUMBER OF CONTRACTOR'S AGENT(S) IN CHARGE Bruce Bosswell -

8. DESCRIBE BRIEFLY THE HAZARD WHICH EXISTS INCLUDING THE APPROXIMATE NUMBER OF EMPLOYEES EXPOSED TO OR THREATENED BY SUCH HAZARD. (Continue on another sheet if necessary)

The incompetent and insonsitive manner in which The sampling for Plutonium Contamintion in (10) Employees at this plant (3) with as been wating a unsatisfactory amont of Time for Relief or Adjustment

9. LIST BY NUMBER AND/OR NAME THE PARTICULAR OSHA STANDARD(S) PRESCRIBED BY THE DOE WHICH YOU BELIEVE HAS BEEN VIOLATED, IF KNOWN.

DOE. ORDER - 5480.8 All Sections Related to Health and safty

10.A. TO YOUR KNOWLEDGE, HAS THIS VIOLATION BEEN THE SUBJECT OF ANY UNION/MANAGEMENT GRIEVANCE OR HAVE YOU (OR ANYONE YOU KNOW) OTHERWISE CALLED IT TO THE ATTENTION OF, OR DISCUSSED IT WITH, THE EMPLOYER OR ANY REPRESENTATIVE? (Check one) ☒ YES ☐ NO

B. IF "YES" IS CHECKED ABOVE, PLEASE GIVE THE RESULTS, INCLUDING ANY EFFORTS BY MANAGEMENT TO CORRECT THE VIOLATION.
The GRiEVANCE Report No. is - 2851 - AND if you A copy/ OR talk to me call

11. PLEASE CHECK ONE:

☐ I do not want my name revealed to the employer.
☒ My name may be revealed to the employer.

Robert J Casey (Signature)	9-8-88 (Date)	Robert J CASEY (Typed or printed name)

IF YOU ARE A REPRESENTATIVE OF EMPLOYEES, GIVE THE NAME OF YOUR ORGANIZATION.

ADDRESS OF ORGANIZATION (Street, City, State, Zip Code)

TELEPHONE NO.

Date Rec'd 9/9/88 Smd/DOE
Log B-2359
File 5488.2a
Library ________

Westinghouse Materials Company of Ohio

EMPLOYEE BULLETIN

September 9, 1988

POOS UPDATE

TO ALL EMPLOYEES:

(The following information has been released to the local media.)

Westinghouse is continuing to evaluate analytical data that indicates that some FMPC employees may have been contaminated with plutonium.

Results received in August from urinalysis testing of eight FMPC employees indicated detectable levels of plutonium. These eight employees and three others had submitted the urine samples in March, April and May of 1988. When the results received in August showed positive results on the eight workers, fecal samples for all 11 workers were collected and submitted for laboratory analysis. At the same time, each of the 11 submitted two additional urine samples for testing at two separate outside laboratories.

Results from the fecal samples were received September 8 and indicated positive results for four of the 11 workers, including one who had not tested positive in the earlier urine sample. Results from the two follow-up urine samples have not yet been received.

Westinghouse is proceeding on the assumption that the analyses are correct and has restricted the affected employees from any further work around radioactive material until additional testing and evaluation can be completed.

The four employees whose fecal samples tested positive will be sent for in vivo (whole body count) monitoring as a precaution. It is unlikely, however, that in vivo monitoring will detect the plutonium, because the bioassay results collected thus far indicate plutonium presence at well below the levels detectable via in vivo monitoring.

Preliminary rough calculations of the effective dose equivalent from data reported for the fecal samples received September 9 indicate levels of exposure well below the current U. S. Department of Energy limits.

Plutonium is considered more hazardous than uranium and when inhaled remains

REMOVAL DATE: September 23, 1988

HUMAN RESOURCES REVIEW: ________

in the body considerably longer than uranium. The levels of plutonium found in the affected employees are a matter of concern, but would not constitute a health problem unless they continued to be exposed and, consequently, assimilated higher levels of plutonium.

Exposure to plutonium at the FMPC would have come from working with Plutonium Out of Specification (POOS) material in the plant's chemical processing areas. POOS material contains higher concentrations of plutonium (about 10 parts per billion) than is acceptable in recycled uranium normally nandled at the FMPC.

The POOS material came to the FMPC for other U. S. Department of Energy sites in the form of residues which had been reclaimed from nuclear reactors. The material was processed through the FMPC refinery to make uranium trioxide (U03) or orange oxide, which is eventually converted to uranium metal. Orange oxide produced before the 10 ppb limit was established in January 1986, has been inventoried and marked and is no longer used in the process of making uranium metal.

Most of the POOS processing work had been done before June of 1987. The only work involving POOS material being done now is in Plant 4, where dust collectors for a reaction bank which had contained POOS material are being cleaned. It is unknown whether any POOS material is contained in those dust collectors, but the work is being done as though POOS materials are present as a precaution.

It is anticipated that samples will be collected and analyzed for additional FMPC employees who may have been involved in POOS work.

Gordon F. Beecher
Manager, Human Resources

Westinghouse Materials Company of Ohio
EMPLOYEE BULLETIN

September 15, 1988

SUSPECTED POOS MATERIAL DISCOVERED IN WASTE OPERATIONS SAMPLING

TO ALL EMPLOYEES:

WMCO is reviewing data and has taken some precautionary measures after the identification of 11 drums of waste material that may contain concentrations of plutonium above the current DOE acceptable level of 10 parts per billion.

At the FMPC, each drum of waste is checked to assure that no standing liquid is present as a step in the preparation of waste for off-site shipment. The presence of standing water is not permitted in off-site waste shipments.

Drums are brought to the sampling line from an outside storage pad grouped by the material code stenciled on the drums. An operator inspecting the waste discovered that the material in the 11 drums was not consistent with material in similarly labeled drums. The material was sampled and quarantined pending chemical analysis. Subsequent analysis indicates that the material may contain higher than acceptable levels of plutonium.

As a precautionary measure, about 35 persons who work in the area have been sent for bioassay testing (urine sampling) to assure that there was no uptake of plutonium. The 11 barrels remain quarantined pending further review of the laboratory analyses.

Inspection of waste material prior to off-site shipment is conducted in a controlled area equipped with continuous air monitoring devices, and other precautionary radiological testing is conducted regularly in that area.

We are tracing the history of these and all similar materials stored on Pad 1. Sampling operations have been suspended pending completion of material history and procedure reviews.

W. H. Britton
WMCO Executive Vice President

REMOVAL DATE: September 22, 1988

HUMAN RESOURCES REVIEW: ______

M-362 (REV 2/22/88)

FMPC
GRIEVANCE REPORT
(2nd. Step)

No. A 4552

EMPLOYEE'S NAME: Robert J CASEY
BADGE NO: 2991
JOB CLASSIFICATION: Site Service worker
SHIFT: 1st
PLANT: Plt 5 Trailer
IMMEDIATE SUPERVISOR: Matt HARper
DATE & TIME OF INCIDENT: (IF ANY) 4-1-85 9-15-88

DESCRIPTION OF INCIDENT OR COMPLAINT

IN 4-1-85 WHEN I STARted working FOR NLO ThrougH 9-4-86 when I worked for westinghouse I WAS EXPOSED to plutonium That was out of Specification to Run ThrougH The process At the Refinery, Sume of the ByProducts from The (UC3) was Higher Than 30ppb ThouGH I WAS not iNFormed of the out of Spec. Materale, until EARly 1986. So I WAS UNAWARE of what I WAS working with At The Time of my EXPOSURE.

ALLEGED CONTRACT VIOLATION

Article XI Safety AND Health ALL SECtions Applyed.

RELIEF OR ADJUSTMENT SOUGHT

Reimbursement on ALL Losses That ARE incurred in The Past AND in the Future Physically AND Mentally.

Signature Robert J Casey (EMPLOYEE) Date 9-15-88 Signature (UNION STEWARD)
Grievance Presented To Matt Harper (SUPERVISOR) Date 9-16-88

SECOND STEP REPLY BY DEPARTMENT REPRESENTATIVE

Mr. Casey's record shows that his employment started 4/1/85. The last drum of what is now considered out of specification was produced on 3/25/85, before Mr. Casey's employment.

Reply Presented To (UNION STEWARD)
Signature Matthew C. Harper
Matthew C. Harper (DEPARTMENT REPRESENTATIVE)
Grievance Satisfactorily Settled? ☐ Yes ☒ No
Date 9/23/88
Signed Robert J Casey

INSTRUCTIONS: *Prepare in quadruplicate. Present all four copies to Supervisor before second step meeting. After second step reply is written, the green copy is retained by the Supervisor and forwarded to Employee Relations. The remaining yellow, white, and pink copies are given to the Union Steward. If grievance is satisfactorily settled, pink copy is returned to the Supervisor who forwards it to Employee Relations; white copy is returned to grievant and yellow copy to Union President for file. If the grievance is not settled in the second step, pink, white and yellow copies are given to the Union President for referral to the third step on the pink copy.*

FMPC-P-861 REV 3-17-86

DESCRIPTION OT INCIDENT OR COMPLAIT

NO-4552

SENSE The FRist SAMples the COMPANY ReCEived ON MY iNTAKE WAS BefoR The Poos I DoNt NOW when OR how high the LeveL of pLutoNiom went oR how Low it WeNt iN the Time it took foR The COMPANY to Run the SAMples.

University of Waterloo

Waterloo, Ontario, Canada
N2L 3G1

Faculty of Science
Department of Chemistry
519/885-1211

RECEIVED SEP 26 1988

September 23, 1988

Ms. Harriet Applegate
Greater Cincinnati Occupational Health Clinic
Providence Medical Plaza # 203
2450 Kipling Ave.,
Cincinnati
Ohio 45239
USA

Dear Ms. Applegate,

Further to our telephonic conversation regarding uranium and plutonium determinations in Robert Casey's urine sample, I attach herewith results on the determination.

I wish to apologize for the delay in dispatching the results. I shall be sending you complete details of analytical procedure for the determination of uranium and its isotopic composition and of plutonium shortly.

Yours truly

(H.D. Sharma)
Professor of Chemistry

Robert Casey

URANIUM AND PLUTONIUM CONTENT IN URINE SAMPLE

Uranium (total)	0.83 ± 0.2 μg[†]
Uranium-235/uranium 238	0.02 ± 0.005
Uranium-235/uranium 238 in Natural uranium	0.0072
Plutonium-239	0.4 dpm or 0.18 pCi (0.000174 microgram[*]

[*] It is assumed that alpha activity is due to plutonium-239

[†] μg = microgram

Westinghouse
Materials Company
of Ohio

PO Box 398704
Cincinnati, Ohio 45239-8704

(513) 738 6200

Contact: Pete Kelley
Telephone: (513) 738-6644

FOR USE: Immediate

FERNALD, OHIO September 29 -- Follow-up tests on five Feed Materials Production Center workers suspected of plutonium contamination have proven negative.

The five employees were sent to Battelle Pacific Northwest Laboratory in Richland, Washington for additional tests after preliminary medical tests showed extremely low levels of plutonium.

The follow-up tests were one-hour counts in an in-vivo monitor for plutonium and several other materials.

The employees had worked with plutonium-contaminated materials in a strictly-controlled process area.

An additional group of employees who work in an area where a barrel of residue was found to be contaminated with trace amounts of plutonium have had preliminary-urine tests for both uranium and plutonium. Tests completed so far for uranium were all negative. The tests for plutonium are sent off-site for bioassay, and test results are not yet available.

-more-

"We have no indication of any uptake of contaminants from this group," said Howard Christiansen, manager of Operations Safety and Health for Westinghouse Materials Company of Ohio, government contractor at the FMPC.

##WMCO:PA/PI:88:125##

10/4/88

To: Bob Casey

From: John J. Fitzgerald

Bob:

Andy Basset (DOE investigator) would like for you to call him concerning some discrepencies between the information he got from you and what the company gave.

The following are the dates per the company;

First Urinanalysis taken -	Sept 1986
Informed of results	April 27, 1987
Follow-up sample collected	May 4, 1987
" " Sent to lab	May 26, 1987
Result given	June 30, 1987
Fecal Collected	July 6, 1987
Sent to lab	July 16, 1987
Result given	July 21, 1987

Andy's number is 1-615-576-0852, you can use the phone at the Union office if you like. Fitz

Department of Energy
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831–8733

October 5, 1988

Mr. Robert J. Casey
1872 Sunset Avenue
Apartment 3
Cincinnati, Ohio 45238

Dear Mr. Casey:

DOE OCCUPATIONAL SAFETY COMPLAINT AT THE FMPC REGARDING PLUTONIUM BIOASSAY SAMPLING OF ROBERT J. CASEY

Your complaint dated September 8, 1988, regarding the above subject was received in this office on September 10, 1988. An investigation was conducted by a member of the Safety and Health Division. The enclosed summary details the findings of our investigation. By copy of this letter, WMCO management is being informed of our investigation so that any action necessary by them will be taken.

Your interest and concern with the safety and health of the employees at the FMPC are appreciated. Should safety or health concerns arise again, hopefully, they can be resolved locally using the procedures and expertise available at your facility.

Sincerely,

David B. Howard
David B. Howard, Director
Safety and Health Division

9390.4
SE-334:Bassett

Enclosures:
1. Appeal Process
2. Investigation Summary

cc w/enclosures:
R. L. Egli, SE-30
J. A. Reafsnyder, DP-34

CERTIFIED MAIL
RECEIPT REQUESTED

Enclosure 1

OAK RIDGE OPERATIONS SAFETY OR HEALTH COMPLAINT APPEAL PROCESS

If you wish to appeal the results of your complaint investigation, submit a written statement expressing your views to:

Mr. R. L. Egli, Assistant Manager
for Safety and Environment
U.S. Department of Energy
Oak Ridge Operations
Room 3025, Federal Building
Post Office Box 2001
Oak Ridge, Tennessee 37831-8730

The Safety and Health Division of the Oak Ridge Operations may also submit a written position statement to Mr. Egli, with a copy to you. Mr. Egli, at his direction, or at the request of you or the Safety and Health Division, may hold an informal conference at which both parties may orally present their positions. After consideration of all views, Mr. Egli would determine the disposition of the complaint. You would be furnished a written copy of his determination.

OCCUPATIONAL HEALTH COMPLAINT INVESTIGATION REGARDING PLUTONIUM BIOASSAY SAMPLING OF ROBERT J. CASEY

1. BASIC FACTS

On September 9,1988, the Department of Energy Site Office at the Feed Materials Production Center (FMPC) received a formal complaint from Robert J. Casey dated September 9, 1988. To better describe his specific concerns, the complainant revised his complaint at the time of the investigation on September 27, 1988. The revised complaint alleges that the WMCO staff was incompetent and insensitive in the handling of his plutonium bioassay sampling at the FMPC.

2. INVESTIGATION ACTIVITIES

On September 27, 1988, Andrew C. Bassett, DOE Safety and Health Division, met with Robert J. Casey, WMCO Chemical Operator, and John J. Fitzgerald, Safety Committee Chairman, Fernald Atomic Trades and Labor Council. Mr. Casey explained the chain of events which led to the filing of his complaint. The following information was revealed during the interview. This information was subsequently discussed and verified with Stuart Hinnefeld, WMCO Dosimetry and Instrumentation Manager.

On September 12, 1986, Mr. Casey submitted a urine sample for plutonium analysis. The sample was collected as part of a large sampling effort to establish baseline plutonium levels for workers who would be involved in processing recycled uranium materials containing plutonium in amounts greater than 10 parts per billion (these recycled uranium materials are called plutonium out-of-specification or POOS materials). Since the samples were collected to establish baseline data rather than in response to a suspected exposure, WMCO assigned no priority to the analysis of the samples which was performed by U.S. Testing. Although Mr. Casey's sample was sent out for analysis in January 1987, WMCO did not receive the report from U.S. Testing until April 1987 at which time Mr. Casey was informed of the results. Mr. Casey's results were only slightly above the detection limits for plutonium, and the WMCO staff believed that results were due to an erroneous sample analysis rather than a true plutonium exposure since Mr. Casey was not known to have previously worked with POOS materials. Although Mr. Casey believes that he did work with POOS materials in the Refinery prior to submitting his sample, WMCO records indicate that the last POOS UO_3 was processed in the Refinery on March 25, 1985, one week before Mr. Casey began his employment at the FMPC. This fact was verified with Tim Huey, Area Supervisor of the Refinery. At Mr. Casey's own request, he was placed on work restriction pending the analysis of follow-up samples.

Follow-up urine and fecal samples were submitted by Mr. Casey, and, due to poor communications within WMCO, Mr. Casey was misinformed on several occasions regarding when the urine samples were sent to U.S. Testing and how long the sample analysis would take. There was an unreasonable delay in forwarding the urine samples for analysis and in receiving the urine and fecal sample results from U.S. Testing. Results from the May 4, 1987 follow-up urine sample were not received until June 30, 1987, and results from the July 6, 1987 follow-up fecal sample were not received until late

September 1987. Both follow-up samples were negative for plutonium. Upon receipt of the fecal sample results in September 1987, Mr. Casey was returned to the production area after spending more than four months on work restriction.

Mr. Casey also expressed the desire to have his case reviewed by an independent physician to ensure an impartial assessment of his exposure and its associated health risks.

3. CONCLUSIONS

There were unreasonable delays in the submission of Mr. Casey's original and follow-up bioassay samples to U.S. Testing. The follow-up samples did not receive appropriate prioritization or tracking by WMCO to ensure prompt analysis and results reporting.

Although Mr. Casey's original urine sample result cannot be tied to a specific POOS campaign, it is not inconceivable that he might have come in contact with POOS residues while employed at the FMPC.

4. VIOLATIONS

None.

5. RECOMMENDATIONS

a. It should be assumed that a plutonium exposure did take place and that Mr. Casey's original urine sample results are valid. Using the available sample results, WMCO should calculate Mr. Casey's organ dose commitments from the exposure and should provide this information to Mr. Casey with an explanation of the associated health risks.

b. WMCO should provide Mr. Casey with the opportunity to consult with a private physician regarding his exposure after he has been provided with his calculated organ dose commitments.

c. WMCO should improve follow-up sampling mechanisms to ensure prompt sample analysis and results reporting when a worker is placed on restriction.

ICWU
INTERNATIONAL CHEMICAL
WORKERS UNION
1655 West Market Street, Akron, Ohio 44313 / (216) 867-2444

FRANK D. MARTINO, PRESIDENT
W. A. JOINER, SEC'Y-TREAS.

October 6, 1988

John K. Webster, Representative
International Chemical Workers Union
1008 Dayton St.
Hamilton, OH 45011

Dear Brother Webster:

As per our recent conversation, please find enclosed herein, the analytical results of brother Robert Casey's urine sample. Also enclosed is the methodology for the determination of uranium-235, uranium-238, total uranium and plutonium in the urine that you requested. Copies of both the laboratory analysis and the methodology have been forwarded to our medical consultant, Mark Cullen, M.D. for his evaluation.

Should you have any questions regarding this matter don't hesitate to call my office.

In solidarity,

David W. Ortlieb, Director
Health and Safety Department

DWO:ca
Enc.

cc: W/O Enc.
Frank D. Martino
W. A. Joiner
Walter Fluharty
With Enc.
Charles Chapman
Harriet Applegate ✓

METHODS FOR THE DETERMINATION OF URANIUM AND PLUTONIUM IN URINE SAMPLES

URANIUM

A 500-mL aliquot of a 24-hour urine sample was taken in a 1 liter (L) beaker and then ∼100 milliliter (mL) of concentrated nitric acid (Conc. HNO_3) AND 50 mL or hydrogen peroxide (H_2O_2) were added. The mixture was gently heated to boiling and then evaporated to ∼100 mL. Additional amounts of conc. HNO_3 were added to the mixture to ensure complete oxidation of organic matter and then it was evaporated to a small volume. The mixture was fumed with perchloric acid ($HClO_4$) to ensure complete wet oxidation of all organic matter. The resulting solution was then made to 9M HCl.

The determination of uranium in the sample is based on producing indicator radioisotopes by irradiation of uranium in the solution with neutrons in a nuclear reactor and then quantitatively measuring the activity of the radioisotopes. The activity of the radioisotopes bears a relationship to the amount of uranium present in the sample.

To reduce the matrix effects or interference from the radioisotopes produced by the irradiation of other elements like sodium in the sample, the uranium present in the sample is separated by following an ion-exchange procedures. The 'wet-oxidized' sample in 9M HCl was passed through an ion-exchange column properly packed with Dowex-1 resin. The column was washed with 25 mL of 9M HCl. The uranium was eluted from the column with 0.1M HNO_3. The eluant was evaporated to 5 mL. Conc. HNO_3 was added to the solution to ensure that all HCl was removed from it and the volume of the solution was reduced to ∼ 0.75 mL. It was then transferred to a polyethylene irradiation capsule.

A computer controlled fully automated system for the determination of various elements by the instrumental neutron activation (INA) method has been in operation at the McMaster University for several years. A separate facility dedicated to the determination of uranium by the delayed-neutrons counting (dnc) of neutrons emitted by some fission products produced by the $^{235}U(n,f)$ reaction is also utilized for the determination of U-235 in the sample. The computer output from the measurement shows total uranium content on the basis that the isotopic composition of uranium in the samples is the same as found in nature, i.e., 0.72% as U-235 and 99.28% as U-238.

Uranium can also be determined by the INA methods by estimating another indicator radioisotope, U-239, produced by the $^{238}U(n,\gamma)$ ^{239}U reaction. The U-238 content can be determined by assaying radioactivity of the indicator radio-isotope U-239. If uranium isotopes are present in the sample with the same isotopic composition as found in nature, both methods should give the same total uranium content. However, if the isotopic composition of uranium differs from what is found in nature, total uranium content determined by the methods will differ. For example, the total uranium found by the dnc methods to be 0.5 microgram (ug) and 0.1 ug by the latter methods, indicates that U-235 content is approximately five times higher than that found in nature or - 3.6 per cent U-235 and 96.4 per cent U-238 or enriched uranium with an enrichment factor of 5. Similarly, if we find that the uranium content is 0.1 ug in the dnc method and 0.5 ug by the latter methods, the isotopic composition of uranium in the sample is 0.144 per cent U-235 and 99.956 per cent U-238. Uranium with low isotopic composition (<0.72 per cent) is described as depleted uranium. Enriched or depleted uranium is normally found in work places and therefore presence of enriched or depleted uranium in urine etc. can provide information as the the place from where uranium may have been ingested.

The urine sample was analyzed by the two methods and the uranium contents were found to be 1.12 ug by the dnc method and 0.4 ug by the other method. The results imply that the isotopic composition of uranium is 2 percent as U-235 and 98 per cent as U-238. The total amount of uranium in the 24-hour sample is 0.83 ug.

PLUTONIUM

A 500 mL aliquot of the 24-hour urine sample was wet-oxidized by following the procedure described earlier (see under uranium para 1). The solution after the wet oxidation procedure was made to 0.5M HNO^3.

The determination of plutonium is based on the liquid-liquid extraction of plutonium (IV) with 0.5M 2-Thenoyltriuoroacetone (TTA) from 0.75M HNO^3 solution. The plutonium in the sample in dilute HNO3 was reduced by heating it for 5 minutes at ∼80°C with hydroxylamine. The plutonium was then oxidized to Pu(IV) by the addition of sodium nitrite. The solution was then adjusted to ∼ 1M HNO^3 and then contacted with 0.5M TTA solution for ∼10 minutes in separatory funnel. The aqueous phase was discarded and the organic phase was washed with 1M HNO^3 and finally the plutonium was back extracted into the aqueous phase with 10M HNO^3. The solution was evaporated to a small volume and then pipetted onto a planchet. The planchet was dried under an infrared heat lamp and then heated to dull red heat.

The alpha activity from the sample was assayed with a solid-state detector (silicon) mounted in a vacuum chamber in conjunction with appropriate electronics like preamplifier, amplifier and a scaler. The background of the counter was 0.03 counts per minute.

QUALITY CONTROLS

Appropriate and applicable quality control methods are followed to assure acceptable repeatability and reproducibility.

**Westinghouse
Materials Company
of Ohio**

PO Box 398704
Cincinnati Ohio 45239 8704

513 738 6200

WMCO:P:88:407
October 24, 1988

Dear Fellow Employee and Family:

This past week, our plant, along with Hanford, Savannah River and Rocky Flats, has been in the center of a storm of controversy and criticism.

We have been the focus of leading news media locally, across the U.S. and Europe, as well as various politicians including President Reagan. I am sure the attention will continue for awhile.

Most of the focus has been on the past. There isn't much we can do about the past. What we have control over is the future, specifically the improvement and quality of operations at the FMPC.

All of us have worked hard and we're doing very well. We have made tremendous progress. Jim Reafsnyder, DOE Site Manager, has steadfastly defended our current progress in the many interviews he has recently had to field.

Through all of this, I wish that I could assure you that the FMPC will return to a vibrant production plant accepted by our neighbors, all employees, and critics as a safe place to work, and that our future is 100% guaranteed. I can't do that; but I can tell you what I know:

- Our plant will never operate as it did in the past. That doesn't make it right or wrong; it is just a fact.
- We have little production need in the near future.
- From an operational, health, and safety point of view, we are better now than ever and will continue to get better. If we don't we're out of business.
- We are recognized as achieving significant health and safety accomplishments at the FMPC and in fact we very well may be leading our sister facilities regardless of what you read in the papers and hear or see on the radio and television.
- You should be aware that together we are very much a part of the solution, not the problem:

I also think there are several things that need clarification:

* First, I don't know of any plans to shut down the FMPC. The fact is, as I mentioned in our All Employee Meetings in August, production will be minimum for the immediate future, so we must orient ourselves to the task at hand of cleaning up our site. This will take quite a lot of time and money. I expect most of us to be here to do it.

* A number of people have alleged that we have done nothing to correct safety and environmental problems here. You and I know that is simply not true. All you need to do is look around at all of the construction and environmental protection projects completed and ongoing to see that. In addition, all of the safety practices that we have implemented since 1986 are designed to continue to ensure that there never will be a hazard here. Be assured we will continue to implement even more stringent standards of operation in the future.

* There have been allegations made that the standard used by the DOE permits unsafe radiation exposure levels here. That is incorrect. The independent organizations established to set standards for the nuclear industry, the National Council on Radiation Protection and Measurement and the International Commission on Radiological Protection, established a level for safe maximum exposure. That level, 5 rem/year of internal and external exposure, is the standard DOE uses, as well as the federal EPA and the NRC.

The limit applied at the FMPC is below this - 3 rem/year. As you can see, we take a conservative approach in setting our own limit for internal and external exposure just to be safe. Our philosophy is that nobody will be allowed to even get close to our limits. As an example of this commitment, no one at the FMPC exceeded 1.3 rem/year in 1987. The average WMCO employee was occupationally exposed to 0.217 rem/year, which is lower than natural background levels of exposure for the Tri-state area residence of 0.3 rem/year.

Support for procedural changes designed to minimize any potential exposure has been good. The recent criticism in the media will only serve as opportunity to continue to demonstrate that we will not be mediocre.

* A lot of things have been said about plutonium at the FMPC. The simple fact of the matter is that we do not produce plutonium here. It is also a simple fact that it is here. However, what is stored here is only in concentration of less than 6 parts plutonium per 1,000,000,000 parts uranium. This means that all of our control measures to minimize internal exposure from uranium will be effective also in minimizing internal exposure from the trace plutonium content of the uranium. Even with this low level, we are working harder to minimize any potential exposure. In all of the recent testing done

of employees potentially exposed to plutonium, to date, there is no evidence of any ingestion by anyone.

I honestly believe we have every right to approach our friends, neighbors, and families with pride about our accomplishments at the FMPC today. It is those very accomplishments that make us an integral part of a better FMPC in the future.

Together we can continue to build that future successfully because the FMPC is a good safe place to work.

Bruce

M. B. Boswell

Westinghouse
Materials Company
of Ohio

PO Box 398704
Cincinnati, Ohio 45239

(513) 738 6200

WMCO:HR:88:1031
October 25, 1988

Mr. Robert J. Casey
1872 Sunset Avenue
Cincinnati, Ohio 45238

Dear Mr. Casey:

We have been advised of your willingness to travel to Hanford, Washington for an in vivo examination on November 2 or 3, 1988. On Friday, October 28, 1988, a representative of the Occupational Safety & Health Department will be in Room 608 at the Imperial House West (Dante's) on Rybolt Road between 10:00 a.m. and 2:00 p.m. to explain the details of the trip and answer any questions you may have. At that time, we will provide you with an airline ticket and ask you to sign a travel expense form for expense money.

Since there are nine employees to be tested, there will be two groups traveling on two different days. The travel groups are as follows:

Departing November 1

- Daryl Justice
- Roger Biddle
- David Zahner
- Robert Craig
- OS&H Representative
- FATLC Representative

Departing November 2

- Jesse Abney
- Robert Casey
- Denise Baldock
- Clifford Riede
- Steve Maher

All employees will be paid in line with the understanding reached between Mr. Day and myself.

Very truly yours,

Thomas C. Crisler

Thomas C. Crisler, Manager
Human Resource Operations

TCC:jg
c: M. B. Boswell
D. Day, President, FATLC
J. Fitzgerald, FATLC Safety Representative
A. M. Schwartzman

Mechley, Robbins & Kelly Co., L. P. A.
ATTORNEYS AND COUNSELORS AT LAW

BRADEN A. MECHLEY
FREDRIC J. ROBBINS*
JAMES M. KELLY
MARK C. PATTERSON
JACK L. TUCKER**

RICHARD NURRE
THOMAS M. GAIER
RANDY J. BLANKENSHIP**
RICHARD B. UHLE, JR.
DANIEL J. TEMMING***
N. JEFFREY BLANKENSHIP**

SECOND NATIONAL BUILDING
832 MAIN STREET
CINCINNATI, OHIO 45202-1394

(513) 721-3330
TELECOPIER (513) 721-5001

*ALSO ADMITTED IN FLORIDA
**ALSO ADMITTED IN KENTUCKY
***ALSO ADMITTED IN INDIANA

November 2, 1988

Mr. Robert Casey
944 Summit Avenue
Cincinnati, OH 45205

Dear Mr. Casey:

In the process of gathering information on your potential claim, we have reached a point in the process where we have received information from you, or Westinghouse, or other sources, which will enable us to begin to define the issues and obtain expert opinions for the legal claim or claims which may be filed on your behalf.

Enclosed is an investigation and fee aggreement which we have prepared. Please review the agreement, sign where indicated and return it to us in the enclosed envelope.

We have made every effort to draft an agreement which allows you to retain our services without a burdensome financial commitment on your part. If you have any questions, please feel free to call me or Rich Uhle in our office.

Thank you.

Very truly yours,

MECHLEY, ROBBINS & KELLY CO., L. P. A.

Mark C. Patterson (by RBU)

Mark C. Patterson

las/0652j

```
Head Count Analysis        RJ CASEY           Thu Nov  3 12:30:46 1988

ssn: 282502637             Payroll: 55555     Tagword: 88K0121

  seconds  =  3000        date      = 110388       time   = 1227
  detector =    Q2        body code =     02       reason =   12
**************************************************************************
AM241  head count         EQTN-612    using two IG detectors at 0.25kev/ch

        Sum channels    235- 240  =      14.00
      - bkgd channels   244- 261  -      24.00 / 3.0
                                      ----------
                                         6.00/50.00 min =   .12 net CPM

net cpm                        .12
------------------    = ---------  =       .00 nCi          skeletal
calibration factor          1.13

      3.00*sqrt( bkgd )            8.49
DL = -------------------- = -------------- =       .15 nCi
      (min)(cal. factor)     (50.000)( 1.13)

**************************************************************************
EU155  head count         EQTN-612    using two IG detectors at 0.25kev/ch

        Sum channels    343- 349  =       3.00
      - bkgd channels   352- 372  -       9.00 / 3.0
                                      ----------
                                          .00/50.00 min =   .00 net CPM

net cpm                        .00
------------------    = ---------  =       .00 nCi          skeletal
calibration factor          1.48

      3.00*sqrt( bkgd )            5.20
DL = -------------------- = -------------- =       .07 nCi
      (min)(cal. factor)     (50.000)( 1.48)

**************************************************************************
EU154  head count         EQTN-612    using two IG detectors at 0.25kev/ch

        Sum channels    489- 494  =       3.00
      - bkgd channels   497- 514  -       6.00 / 3.0
                                      ----------
                                         1.00/50.00 min =   .02 net CPM

net cpm                        .02
------------------    = ---------  =       .00 nCi          skeletal
calibration factor          1.70

      3.00*sqrt( bkgd )            4.24
DL = -------------------- = -------------- =       .05 nCi
      (min)(cal. factor)     (50.000)( 1.70)
```

```
IG Lung Count Analysis      JR CASEY           Thu Nov  3 10:25:49 1988

ssn: 282502637              Payroll: 55555     Tagword: 88K0110

HT = 68          WT = 191   WT/HT = 2.809      CWT CM = 3.415    ES

  seconds  =  2000        date      = 110388      time   = 1024
  detector =    V1        body code =     03      reason =   12

                    Nuclide       Result        DL

               1    AM241          .000        .134
               2    U235           .000        .090
               3    TH234          .000       2.085

*************************************************************************

    NUCLIDE        RESULT         DL         SUM          CCR          NETCPM

 1  AM241           .021         .134      163.000      157.000         .180

 2  U235           -.021         .090       65.000       65.000        -.173

 3  TH234          -.093        2.085      157.000      157.333        -.078

 4  CE144           .171         .648      113.000      100.667         .370

 5  PU239        -10.256       73.955      142.000      111.333        -.088

 6  PU238         -4.229       30.492      142.000      111.333        -.088

 7  EU155          -.144         .370      117.000      138.333        -.640

 8  EU154          -.019         .235       96.000       99.667        -.110

 9  TH232          -.114         .785       43.000       47.667        -.140


      NUMSTD     scf      con1      con2      dcc     cpm/nci    error

 1    3.000     1.000    24.260     .310     .000     8.416      20.0
 2    3.000     1.000    20.340     .270     .173     8.089      20.0
 3    4.650     1.000     2.354     .302     .068      .839      15.0
 4    4.650     1.000     5.468     .272     .000     2.160      15.0
 5    2.000     1.170      .128     .792     .440      .009      40.0
 6    2.000     1.170      .287     .769     .440      .021      40.0
 7    4.650     1.000    12.070     .293     .000     4.437      15.0
 8    4.650     1.000    15.590     .283     .000     5.931      15.0
 9    4.650     1.000     3.776     .329     .000     1.228      15.0
```

Robert J, Casey
1872 Sunset Avenue
Apt. 3
Cincinnati, Oh 45238

November 22, 1988

Mr. R. L. Egli, Ass't. Manager
for Safety and Environment
U. S. Dep't. of Energy
Oak Ridge Operations
Room 3025, Federal Building
P. O. Box 2001
Oak Ridge, Tennessee 37831-8730

Dear Mr. Egli,

I am writing in regard to Safety Complaint of Mr. Robert J. Casey, of Sept. 9, 1988; and report of DOE's Andrew C. Bassett, DOE's Safety & Health Dep't concerning that complaint.

Material "facts" stated in Mr. Bassett's report, Sections 2 and 3 of Investigation Activities, paragraph 2 and 3, are not correct. The report states that Mr. Casey believes that he worked with POOS material after the March 25, 1985 date mentioned; and Mr. Huey is quoted as stating that the POOS was processed prior to the March 25, 1985 date. The report implies that the fecal sample results were negative, when, in fact, the fecal sample was positive. Also, in Section 4, Violations, the report shows NONE . I disagree with these "facts", as they are stated.

Under Section 5, Recommendations, Mr. Bassett made 3 specific suggestions, and to date, none of these have been carried out. I request that DOE take necessary steps to get WMCO to carry out the recommendations.

Because of the patent errors in the report, I hereby request an audience with you at the earliest convenient time, to clarify and correct this report.

Yours truly,
Robert J. Casey

Robt J Casey

ICWU Legal Dep't.
FAT&LC
J. K. Webster, ICWU
File

CERTIFIED MAIL -- RETURN RECEIPT REQUESTED

From: S. L. Hinnefeld

WMCO:OSH(ODI):88-489

Date: December 11, 1988

Subject: ASSESSMENT OF INTERNAL DOSE FROM EXPOSURE TO PLUTONIUM MATERIALS
THIS DOCUMENT CONTAINS INFORMATION COVERED BY THE PRIVACY ACT

To : R. J. Casey

As part of the response to the safety complaint you submitted to DOE on September 8, 1988, we have performed an assessment of the dose represented by your single bioassay sample of October 13, 1988. The formal dose assessment is provided as an attachment to this letter. In accordance with the findings of the investigation of your safety complaint, our response is being provided to you so that you may discuss the information contained herein with your physician or experts of your choice. Please contact Mr. T. Crisler of Human Resources to discuss making arrangements in that regard.

This dose assessment is provided based on the assumption that there was an uptake of plutonium materials as a result of your work at the FMPC, even though only a single bioassay sample was reported as having detectable levels of plutonium. Normally, when a positive bioassay result is not confirmed by subsequent bioassay sampling or by other confirming data, no dose assessment is performed because there is insufficient information to indicate an actual exposure. The fact that one sample out of many is found to have detectable radioactive materials is not unheard of because bioassay analyses can result in a "false positive" result due to the statistics of the analytical processes and the variability of excretion rates. It has not been definitively demonstrated that an intake of plutonium occurred, despite efforts to confirm the intake by means of follow-up urinalysis, fecal analysis and in vivo monitoring.

This assessment utilizes standard models of plutonium metabolism to determine the size and time of a plutonium intake that would be consistent with this single bioassay data point.

The results of this assessment indicate that an intake of plutonium materials on or about August 13, 1986 is consistent with your bioassay results. It is assumed that this was an acute intake, meaning it occurred over a relatively brief period of time. This is indicated by the fact that only one bioassay sample had measurable amounts of plutonium, and samples submitted subsequently were below the detection level. The assumed intake was of class W Pu-239, which means that half of the Pu-239 material in the lung would clear to the bloodstream in 10 to 100 days. The amount of the intake would be 1.4 nanoCuries of Pu-239.

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                                                        18-NOV-88

                       WESTINGHOUSE CO. OF OHIO

                   R. CASEY, URINE RESULTS, CL W

                          INTAKE EVALUATION

****************************** RADIONUCLIDE ******************************

  PLUTONIUM 239
  PHYSICAL HALF-LIFE = 8.766E+006 DAYS

************ RESPIRATORY AND GI TRACT INPUT - DOSIMETRY INPUT ************

  ACUTE INHALATION INTAKE OF  1.00 MICRON AMAD AEROSOL

  FRACTION OF INTAKE DEPOSITED IN LUNGS = 0.630
  DNP = 0.300     DTB = 0.080    DP = 0.250
  STANDARD ICRP 30 RESPIRATORY TRACT AND GI TRACT MODELS USED

  100.0% CLASS W WITH FRACTIONAL UPTAKE FROM GI TRACT (F1) = 1.000E-004
  STOCHASTIC (INHALATION) ALI = 2.400E+004 DPM

*************************** SYSTEMIC EXCRETION ***************************

  FRACTION OF SYSTEMIC EXCRETION THROUGH URINE = 0.54


********************* PARAMETERS FOR SYSTEMIC MODEL **********************

       COMPARTMENT       COEFFICIENT     BIOLOGICAL HALF-LIFE (DAYS)
       ----------------------------------------------------------
            1            1.590E-002          1.240E+000
            2            1.010E-002          1.570E+001
            3            4.190E-002          1.820E+002
            4            9.321E-001          2.440E+004

***************************** INTAKE ESTIMATE *****************************

  INTAKE ESTIMATED FROM INCREMENTAL URINE DATA
  ESTIMATE OF INTAKE FROM UNWEIGHTED FIT OF DATA  = 3.090E+003 DPM
  EXPERIMENTAL ERROR IN INTAKE ESTIMATE = 1.147E+001 DPM

**************************** DOSIMETRY RESULTS ****************************
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As a result of this intake, it is estimated that you would receive an effective dose equivalent of 26 mrem in the first year after the intake, and 17 mrem in the second year after intake. The effective dose equivalent is a dose that can be thought of as having the same risk of health effects as a whole body dose of the same number. The effective dose equivalent includes the dose to the organs that are most likely to be affected by an internal exposure to a particular radionuclide.

A committed dose equivalent (CDE) is the total dose that a person can expect to receive for the next 50 years from that intake of radioactive materials. Your CDE from this assumed exposure is 0.6 rem. Committed organ doses were also calculated and are shown in Table 2 of the attached dose assessment. The greatest committed dose to an organ would be 14.3 rem to the bone surface.

The International Committee on Radiological Protection (ICRP) has identified a risk factor to relate radiation dose to the chance of contracting a fatal cancer as a result of that dose. That risk factor is 1.65 in 10,000 per rem of effective dose equivalent, which means that you have about a 0.01% chance of getting a fatal cancer as a result of this assumed exposure.

As previously stated, the results given above are based on the assumption that the results of the one sample were correct. The radiation exposures described above are being included in your exposure history.

Your interest in the health and safety of FMPC employees is commendable. The investigation of this matter has caused us to make substantial improvements in the way we collect, track, report and follow-up on samples submitted as part of the bioassay program. We hope this has answered your questions and concerns about this matter. If you have any more questions, please let me know and I will try to help you.

S. L. Hinnefeld, Manager
OS&H Dosimetry & Instrumentation

RWK/SLH

Attachment

c: H. D. Christiansen
T. C. Crisler
J. A. Reafsnyder, DOE-FMPC
A. Bassettt, DOE-ORO
Central Files
Dosimetry Files

THIS DOCUMENT CONTAINS INFORMATION COVERED BY THE PRIVACY ACT

INTERNAL DOSE ASSESSMENT

11-18-88

CASE NUMBER: 2991-RJC-01A

Introduction

An assessment was made of the internal dose received by Mr. Robert J. Casey as a result of an occupational exposure to plutonium materials at the FMPC. This exposure was identified when a urine sample submitted by Mr. Casey on 10-13-86 was found to be above the Minimum Detection Level (MDL) for Pu-239, which is 0.02 dpm/sample. Follow-up urine samples submitted by Mr. Casey on 5-4-87 and 5-5-87 were below the MDL. All of Mr. Casey's plutonium bioassay results are shown in Table 1. Mr. Casey was sent to Battelle Northwest Laboratory for *in vivo* examinations of his lungs and skeletal system for plutonium. The results of these exams indicated plutonium was not detectable in his system.

Methodology

The calculations performed in this dose assessment were made using INDOS, an internal dosimetry software package for personal computers written by Dr. Kenneth Skrable. INDOS uses the ICRP 30 models to determine the intake amount, and generate intake retention fraction tables.

Mr. Casey's initial urine sample result indicating a urinary Pu-239 concentration of 0.04 dpm/sample was assumed to be valid in spite of the fact that Mr.Casey had no unusually high urinary uranium concentrations. Since the plutonium was found in the first urine sample analyzed for plutonium, it was assumed that Mr. Casey had received an acute exposure to Pu materials some time prior to when this sample was provided.

Using INDOS, a best fit of the urinary excretion data to the excretion model was obtained for both class W and class Y Pu-239 since it was unknown which respiratory class of Pu materials he may have been exposed to. Since the second and third data points were below the MDL, the value of the MDL was used as the second datum to create a curve of the excretion pattern. This resulted in an estimate of the amount of intake (I) and the date the intake occurred (D_I) for both classes of material. Next, another routine of INDOS was run which generated a concentration of plutonium expected to be present in bioassay samples at a given time post intake. This was used to determine if the results of the fecal samples submitted by Mr. Casey on 7-16-87 fit the results of the model for either class W or class Y intake estimates. When basic parameters such as the respiratory clearance class and intake date are unknown, models are necessary in internal dosimetry to identify the unknown parameters required to make an assessment of the dose.

INDOS does not calculate organ doses, therefore the 50-year committed dose equivalents to the organs were calculated manually according to the ICRP 30 methodology.

Results

According to the model, for class Y Pu-239, the fecal sample result should have been 2.58 dpm/sample. In fact, the result of his sample was below the MDL of 0.2 dpm/sample for fecal samples, thus indicating a model of class Y material excretion did not match observed results.

For class W Pu-239, according to the model, the fecal sample would be 0.05 dpm/sample, which is below the MDL and is not contradicted by observed results.

As a result of these calculations, it is estimated that an intake of 3.1E+03 dpm (1.4 nCi) of class W Pu-239 occurred on August 13, 1986, 62 days prior to the initial sample date. This intake will result in a committed effective dose equivalent to Mr. Casey of 0.6 rem, 13% of the stochastic ALI. Based on factors published in PNL-6534(1) Health Physics Manual of Good Practices for Plutonium Facilities, it is estimated that this intake would result in an effective dose equivalent of 26 mrem in the first year following intake and 17 mrem in the second year following intake.

The greatest committed organ dose equivalent was 14.3 rem to the bone surface. Other organ doses of interest are shown in Table 2.

The results of the INDOS calculations for both class W and class Y materials are included as Attachment 2 to this report.

Reference

(1) PNL-6534 UC-41, Health Physics Manual of Good Practices for Plutonium Facilities, L. G. Faust, Chairman, May 1988, Table 4.1 page 4.54.

INTERNAL DOSE ASSESSMENT # 2991-RJC-01A 11/18/88

Table 1. Plutonium Bioassay Results.

LASTNAME	BADGE #	SAMPLE TYPE	DATE	RESULTS (dpm/sample) Pu-238	Pu-239	SAMPLE VOL (ml)	LABORATORY
Casey, R. J.	2991	Urine	13-Oct-86	< MDL	4.11E-02	8.00E+02	U.S. TEST
Casey, R. J.	2991	Urine	04-May-87	< MDL	< MDL	8.57E+02	U.S. TEST
Casey, R. J.	2991	Urine	05-May-87	< MDL	< MDL	4.28E+02	U.S. TEST
Casey, R. J.	2991	Fecal	16-Jul-87	< MDL	< MDL	1.42E+02	U.S. TEST

The MDL for Pu238 and Pu-239 is 2.0E-02 dpm/sample for urinalysis and 2.0E-1 dpm/sample for fecal analysis.

Table 2. The 50-year Committed Dose Equivalent (CDE) in Organs from this plutonium exposure.

ORGAN	CDE/I (Sv/Bq)	INTAKE (I) (Bq)	CDE (rems)
Gonads	3.2E-05	5.7E+01	0.183
R. Marrow	2.0E-04	5.7E+01	1.142
Bone surface	2.5E-03	5.7E+01	14.275
Liver	5.3E-04	5.7E+01	3.026
Lungs	1.6E-05	5.7E+01	0.091

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                                                          14-NOV-88


                        WESTINGHOUSE CO. OF OHIO

                               R. CASEY

                     DERIVED INVESTIGATION LEVEL TABLE

******************************** RADIONUCLIDE ********************************

   PLUTONIUM 239
   PHYSICAL HALF-LIFE = 8.766E+006 DAYS

********************* RESPIRATORY AND GI TRACT MODELS *********************

   ACUTE INHALATION INTAKE OF  1.00 MICRON AMAD AEROSOL
   STANDARD ICRP 30 RESPIRATORY TRACT AND GI TRACT MODELS USED

   100.0% CLASS W, WITH FRACTIONAL UPTAKE FROM GI TRACT (F1) = 1.000E-004

   FRACTION OF INTAKE DEPOSITED IN LUNGS = 0.630
   DNP = 0.300     DTB = 0.080     DP = 0.250

**************************** SYSTEMIC EXCRETION ****************************

   FRACTION OF SYSTEMIC EXCRETION THROUGH URINE = 0.54
   FRACTION OF SYSTEMIC EXCRETION THROUGH FECES = 0.46
   INTERVAL FOR COLLECTION OF INCREMENTAL URINE SAMPLES = 1.000E+000 DAYS
   INTERVAL FOR COLLECTION OF INCREMENTAL FECAL SAMPLES = 1.000E+000 DAYS
   VOLUME OF URINE EXCRETED PER DAY = 1.4 LITERS

********************* PARAMETERS FOR SYSTEMIC MODEL **********************

          COMPARTMENT       COEFFICIENT      BIOLOGICAL HALF-LIFE (DAYS)
          ---------------------------------------------------------
               1            1.590E-002           1.240E+000
               2            1.010E-002           1.570E+001
               3            4.190E-002           1.820E+002
               4            9.321E-001           2.440E+004

******************************** INTAKE *************************************

   DIL TABLE CALCULATED WITH INTAKE OF 3.090E+003 DPM
```

WESTINGHOUSE CO. OF OHIO

R. CASEY, URINE RESULTS, CL W

INTAKE ESTIMATED FROM STATISTICAL EVALUATION OF
PLUTONIUM 239 INCREMENTAL URINE DATA

TIME POST INTAKE (DAYS)	URINE COLLECTION PERIOD (DAYS)	BIOASSAY MEASUREMENT (DPM)	ERROR MEASUREMENT (DPM)	RETENTION FRACTION	UNWEIGHTED-FIT EXPECTATION MEASUREMENT (DPM)
62.00	1.00	4.110E-002	2.027E-001	1.332E-005	4.117E-002
265.00	1.00	2.000E-002	1.414E-001	6.422E-006	1.985E-002

IN VITRO BIOASSAY DIL TABLE FOR
3.090E+003 DPM INHALATION INTAKE OF PLUTONIUM 239

	ACTIVITY PRESENT IN				
TIME AFTER INTAKE (DAYS)	INCREMENTAL URINE (DPM)	ACCUMULATED URINE (DPM)	URINE CONCENTRATION (DPM/L)	INCREMENTAL FECES (DPM)	ACCUMULATED FECES (DPM)
338.00	1.616E-002	1.236E+001	1.153E-002	5.477E-002	1.583E+003

```
                                                         18-NOV-88

                     WESTINGHOUSE CO. OF OHIO

                   R. CASEY, URINE RESULTS; CL Y

                        INTAKE EVALUATION

******************************* RADIONUCLIDE ******************************


  PLUTONIUM 239
  PHYSICAL HALF-LIFE = 8.766E+006 DAYS

************ RESPIRATORY AND GI TRACT INPUT - DOSIMETRY INPUT ************


  ACUTE INHALATION INTAKE OF  1.00 MICRON AMAD AEROSOL

  FRACTION OF INTAKE DEPOSITED IN LUNGS = 0.630
  DNP = 0.300     DTB = 0.080    DP = 0.250
  STANDARD ICRP 30 RESPIRATORY TRACT AND GI TRACT MODELS USED

  100.0% CLASS Y WITH FRACTIONAL UPTAKE FROM GI TRACT (F1) = 1.000E-005
  MPC (AIR) = 4.440E-006 DPM/mL
  DAC = 1.200E-005 DPM/mL
  STOCHASTIC (INHALATION) ALI = 3.600E+004 DPM

*************************** SYSTEMIC EXCRETION ***************************


  FRACTION OF SYSTEMIC EXCRETION THROUGH URINE = 0.54


********************* PARAMETERS FOR SYSTEMIC MODEL **********************


       COMPARTMENT        COEFFICIENT     BIOLOGICAL HALF-LIFE (DAYS)
       ---------------------------------------------------------
            1             1.590E-002          1.240E+000
            2             1.010E-002          1.570E+001
            3             4.190E-002          1.820E+002
            4             9.321E-001          2.440E+004

***************************** INTAKE ESTIMATE ****************************


  INTAKE ESTIMATED FROM INCREMENTAL URINE DATA
  ESTIMATE OF INTAKE FROM UNWEIGHTED FIT OF DATA  = 2.733E+004 DPM
  EXPERIMENTAL ERROR IN INTAKE ESTIMATE = 1.303E+002 DPM
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WESTINGHOUSE CO. OF OHIO

R. CASEY, URINE RESULTS; CL Y

INTAKE ESTIMATED FROM STATISTICAL EVALUATION OF
PLUTONIUM 239 INCREMENTAL URINE DATA

TIME POST INTAKE (DAYS)	URINE COLLECTION PERIOD (DAYS)	BIOASSAY MEASUREMENT (DPM)	ERROR MEASUREMENT (DPM)	RETENTION FRACTION	UNWEIGHTED-FIT EXPECTATION MEASUREMENT (DPM)
8.00	1.00	4.110E-002	2.027E-001	1.500E-006	4.100E-002
211.00	1.00	2.000E-002	1.414E-001	7.389E-007	2.020E-002

```
                                                                  14 -NOV-88


                         WESTINGHOUSE CO. OF OHIO

                                 R. CASEY

                     DERIVED INVESTIGATION LEVEL TABLE

******************************* RADIONUCLIDE ******************************

   PLUTONIUM 239
   PHYSICAL HALF-LIFE = 8.766E+006 DAYS

********************* RESPIRATORY AND GI TRACT MODELS *********************

   ACUTE INHALATION INTAKE OF  1.00 MICRON AMAD AEROSOL
   STANDARD ICRP 30 RESPIRATORY TRACT AND GI TRACT MODELS USED

   100.0% CLASS Y, WITH FRACTIONAL UPTAKE FROM GI TRACT (F1) = 1.000E-005

   FRACTION OF INTAKE DEPOSITED IN LUNGS = 0.630
   DNP = 0.300     DTB = 0.080     DP = 0.250

**************************** SYSTEMIC EXCRETION ***************************

   FRACTION OF SYSTEMIC EXCRETION THROUGH URINE = 0.54
   FRACTION OF SYSTEMIC EXCRETION THROUGH FECES = 0.46
   INTERVAL FOR COLLECTION OF INCREMENTAL URINE SAMPLES = 1.000E+000 DAYS
   INTERVAL FOR COLLECTION OF INCREMENTAL FECAL SAMPLES = 1.000E+000 DAYS
   VOLUME OF URINE EXCRETED PER DAY = 1.4 LITERS

********************* PARAMETERS FOR SYSTEMIC MODEL **********************

          COMPARTMENT        COEFFICIENT      BIOLOGICAL HALF-LIFE (DAYS)
          -------------------------------------------------------
               1              1.590E-002          1.240E+000
               2              1.010E-002          1.570E+001
               3              4.190E-002          1.820E+002
               4              9.321E-001          2.440E+004

******************************** INTAKE ***********************************

   DIL TABLE CALCULATED WITH INTAKE OF 2.733E+004 DPM
```

IN VITRO BIOASSAY DIL TABLE FOR
2.733E+004 DPM INHALATION INTAKE OF PLUTONIUM 239

	ACTIVITY PRESENT IN				
TIME AFTER INTAKE (DAYS)	INCREMENTAL URINE (DPM)	ACCUMULATED URINE (DPM)	URINE CONCENTRATION (DPM/L)	INCREMENTAL FECES (DPM)	ACCUMULATED FECES (DPM)
284.00	2.107E-002	6.848E+000	1.506E-002	2.583E+000	1.390E+004

Department of Energy
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831—

December 16, 1988

Mr. Robert J. Casey
1872 Sunset Avenue
Apartment 3
Cincinnati, Ohio 45238

Dear Mr. Casey:

DOE OCCUPATIONAL HEALTH COMPLAINT AT THE FEED MATERIALS PRODUCTION CENTER (FMPC) REGARDING PLUTONIUM BIOASSAY SAMPLING OF ROBERT J. CASEY

I have reviewed your appeal of the subject complaint investigation and am providing the [illegible] information as discussed in a telephone conversation between you [illegible] Howard of my staff.

The results of your July 6, 1987, fecal sample reported by Westinghouse Materials Company of Ohio (WMCO) by U. S. Testing were negative in that they were below the minimum detection level for plutonium in feces. It is common practice to record readings at these levels as negative. I understand that you have submitted a fecal sample to a firm in Canada and that the sample analysis was positive for plutonium. Neither Mr. Andy Bassett, Department of Energy, nor WMCO have received a report of those results. If you desire us to further evaluate this matter, please provide a copy of the results to me or WMCO.

Because the original urine test results were above detection limits for plutonium, it is not inconceivable that you might have come in contact with plutonium out of specification residues while employed at FMPC. For that reason, WMCO was directed to regard your September 12, 1986, urine sample results for plutonium as valid and to provide you with an estimate of the dose commitment which you received from the exposure. WMCO was also directed to provide you the opportunity to consult with a private physician (at the expense of the company) regarding your exposure. Your concern that WMCO has been slow to implement these recommendations has been discussed with WMCO, and I have been assured that implementation of the recommendations will be expedited. David Howard of my staff has informed me that WMCO mailed you a letter containing your dose estimate on December 15, 1988. This letter also extends to you the opportunity to discuss your concerns with a private physician.

In reference to the final recommendation of the report, WMCO has informed us that they have taken steps to improve followup sampling mechanisms to ensure prompt sample analysis and results reporting. My staff will verify that corrective actions have been taken during the next audit visit.

I appreciate that you have brought this matter to my attention, and I understand your concern. I hope the actions noted above meet with your approval; however, if WMCO does not carry out the recommended actions adequately, please feel free to contact me again.

Sincerely,

Richard L. Egli
Assistant Manager for
Safety and Environment

COPY
D. MOORE

FERNALD ATOMIC TRADES & LABOR COUNCIL
Affiliated with The A. F. of L. - C. I. O.

1-16-89

TO: ALL LOCAL'S
FROM D.DAY PRES. F.A.T.L.C
SUBJECT: GRIEVANCES

As per F.A.T.L.C. recent contract negotiations all active grievances as of Oct. 6, 1988 shall be returned to each individual Local for thier review of the Companies proposed resolutions.

Each Local will have the opportunity to accept or reject the settelment offer for each grievance. If re-jeceted the grievance will be submitted to the Federal Mediation process for a ruling.Upon ruling of the mediator and if mutual agreement by both parties is not reached the grievance will be placed back in it's original step of the grievance procedure and will be set for arbitration.

This is a onetime negtiated option, it does not represent a change in the contractual grievance steps outlined in the contract.

Please give each grievance individual consideration, this will help expedite the process.

Dave Day
Dave Day President

Greater Cincinnati Occupational Health Center
AT PROVIDENCE HOSPITAL

Suite 203
Providence
Medical Plaza

2450 Kipling Avenue
Cincinnati, Ohio 45239
(513) 541-0561

January 11, 1989

Robert Casey
944 Summit Road
Cincinnati, Ohio 45205

Dear Mr. Casey:

I am writing in follow-up to our telephone conversation of about two weeks ago. As I told you on the telephone, I spoke with a health physicist at the National Institute for Occupational Safety and Health (NIOSH) regarding the assessment of plutonium you received from Westinghouse. The NIOSH health physicist confirmed that this is the type of assessment that would give some idea of your exposure and internal dose of plutonium. Although the exercise itself is adequate, I believe it may be based on some faulty assumptions. For example, in the urine testing that was done through this Health Center, you were shown to have an elevation of plutonium approximately ten fold higher than the single elevated level detected by Westinghouse. Because of this elevated value more than one year after the first abnormal value, the assumption of a one-time exposure is probably faulty. The best way to assess your true body burden of plutonium is to do serial urine testing for plutonium and to construct an elimination curve; then one could apply the same type of internal dose assessment that was done by Dr. Hinnefield, but with greater accuracy.

As I stated on the telephone, I am not sure that calculating your increased risk of developing some form of cancer or other disease from your exposure is going to be the most meaningful exercise for you. In other words, telling you your risk of developing cancer is two times or five times higher than the general population does not mean that you will or won't get that disease.

Your concern about future health problems arising from your exposures at FMPC could be addressed by intermittent examinations, including a medical history, physical examination and appropriate laboratory testing. This would allow you to discuss symptoms you feel are abnormal and would allow for early detection of adverse health effects. It would also enable you to address other workplace exposures. If you would like to pursue that in this health center, please schedule an appointment or give me a call. I hope we can be of help to you in sorting out this complicated situation.

Sincerely,

Linda S Forst

Linda S. Forst, M. D.

LSF/ric

**Westinghouse
Materials Company
of Ohio**

PO Box 398704
Cincinnati, Ohio 45239-8704

(513) 738 6200

In Vivo Examination Center

Preliminary Examination Results

Name ROBERT CASEY

Social Security Number 282-50-2637

Date of Examination 1-25-89

The In Vivo examination you have just received is part of the comprehensive radiological health monitoring program at the Feed Materials Production Center and is just one of several methods used to evaluate what, if any, radiation exposure you receive every year. When necessary we use several other methods, such as personal dosimeters and routine urinalysis, to fully evaluate your exposure. Personal dosimeters are used to measure your radiation exposure that is caused by radioactive material outside your body. In Vivo examinations and urinalysis are used to determine if radioactive materials have entered your body through breathing, swallowing, or other means, such as cuts in your skin. If any radioactive materials have entered your body, they will cause some radiation exposures. The monitoring programs at FMPC are intended to provide the best possible measurement of the radiation exposure you receive as a result of your employment.

Results

The following preliminary evaluation has been made of the in vivo examination just performed:

Your examination did not detect any uranium or thorium. However, if any of these materials were present, the amounts would be less than the quantities listed below.

Nuclide	Quantity
Thorium-232	None Detected, MDA* = 0.98 nCi
Uranium-235	None Detected, MDA* = 0.19 nCi
Uranium-238	None Detected, MDA* = 2.3 nCi

* MDA = Minimum Detectable Amount

RELEASE OF MEDICAL
INFORMATION

DATE Feb 27, 1989

TO: Westinghouse Feed Materials,
Attn. Safety Office (Health & Safety Division)

I, Robert Casey, authorize the release of my medical records specifically: all exposure information - especially radioisotope exposure (film badge, urine, whole body counting)

Performed on or about

to: Douglas H. Linz MD

☒ Occupational Health Clinic
U.C. Medical Center
234 Goodman St. ML-584
Pavilion J, 4th floor
Cincinnati, Ohio 45267

☐ Bureau of Disability Determination
Rehabilitation Services Commission
9403 Kenwood Road
Cincinnati, Ohio 45242

Witness

Robt J Casey
Signature

10-26-53
Date of Birth

282-50-2637
Social Security

RELEASE OF MEDICAL
INFORMATION

DATE Feb 27, 1989

TO: gcoHc

I, Robert Casey, authorize the release of my medical records specifically: all medical records.

Performed on or about

to:

Douglas H. Linz MD

☒ Occupational Health Clinic
U.C. Medical Center
234 Goodman St. MC-536
Pavilion J, 4th floor
Cincinnati, Ohio 45267

☐ Bureau of Disability Determination
Rehabilitation Services Commission
9403 Kenwood Road
Cincinnati, Ohio 45242

Witness

Robert J Casey
Signature

10-26-53
Date of Birth

282-50-2637
Social Security

RELEASE OF MEDICAL
INFORMATION

DATE Feb 27, 1989

TO: Michael Kelley MD

I, Robert Casey, authorize the release of my medical records specifically: all medical records.

Performed on or about

to:

Douglas H. Linz MD

☒ Occupational Health Clinic
U.C. Medical Center
234 Goodman St.
Pavilion J, 4th floor
Cincinnati, Ohio 45267

☐ Bureau of Disability Determination
Rehabilitation Services Commission
9403 Kenwood Road
Cincinnati, Ohio 45242

Witness

Signature

10-26-53
Date of Birth

282-50-2637
Social Security

RELEASE OF MEDICAL INFORMATION

DATE Feb 27, 1988

TO: Westinghouse Feeds Materials
Medical Division

I, Robert Casey, authorize the release of my medical records specifically: copies of medical records.

Performed on or about

to:
Douglas H. Liviz MD

☒ Occupational Health Clinic
U.C. Medical Center
234 Goodman St., ML-536.
Pavilion J, 4th floor
Cincinnati, Ohio 45267

☐ Bureau of Disability Determination
Rehabilitation Services Commission
9403 Kenwood Road
Cincinnati, Ohio 45242

Witness

Robert J Casey
Signature

10-23-57
Date of Birth

282-50-2637
Social Security

Occupational Health Clinic
University Occupational Medicine Group of Cincinnati

Consultants in Occupational and Environmental Health

Patient Name: Robert Casey Date: 4/24/89 Dr.

	Pre-bronchodilator			Post-bronchodilator	
Parameter	Actual	Pred	%Pred	Actual	% Change
FVC	5.15	4.75	108		
FEV-1	3.38	3.83	88		
PEFR	6.57	9.02	73		
FEF25-75	2.13	4.82	44		
FEV-1/FVC	.66	.84	78		
FEV-3/FVC	.88				

Technician: Kermit Larsen. Patient Effort: [✓ Excellent] Fair Poor

Patient Motivation: [✓ Excellent] Fair Poor

All lung volumes corrected to BTPS.
~~All tests~~ conducted in sitting position with noseclips.
Predicted normals used: Knudson/Cherniack
Spirometer: Ohio Med 822 with Spirotech 300 microprocessor.
Paper Speed: 20.0 mm/sec.

Tests conducted according to methods, equipment, and procedures recommended by the American Thoracic Society (ATS). Tests meet and/or exceed ATS criteria for validity and reproducibility, unless noted.

Interpretation: MODERATE AIRWAY OBSTRUCTION INDICATED BY REDUCTION IN FEV1/FVC RATIO (78% OF PREDICTED) WITH NORMAL FVC.

R T McKay. Ph.D
Roy T. McKay, Ph.D.
Laboratory Director

University Environmental Health Foundation, Inc.
Pavilion J 4th Floor
234 Goodman St., ML-536
University of Cincinnati Medical Center
Cincinnati, OH 45267-0536
Telephone: (513) 555-0350

Occupational Health Clinic
University Occupational Medicine Group of Cincinnati
Consultants in Occupational and Environmental Health

June 2, 1989

Mr. Robert J. Casey
1872 Sunset Avenue
Cincinnati, OH 45238

Dear Mr. Casey:

This letter is meant as a summary of your evaluation to date at the Occupational Health Clinic at the University of Cincinnati Medical Center. You were initially evaluated in the Clinic on February 27, 1989, because of concerns with regard to potential health effects related to a plutonium exposure which occurred while you were working as a chemical operator at the Feed Materials Manufacturing facility at Fernald, Ohio, currently under the direction of Westinghouse.

As a chemical operator, during your 3 1/2 years at Fernald, you were responsible for taking raw material and extracting the radioactive substances. This involved a number of chemical extraction procedures and included potential exposures to nitric acid, citric acid, caustic (sodium hydroxide), TBP, a number of solvents including a scrubber's solvent, and kerosene with various additives, alcohol, raw ammonia, as well as hydrogen fluoride. Potential radioactive substance exposure included exposures to uranium 235, 238, and plutonium 239, thorium, thoron, radon, and tritium.

The specific procedures of your job varied according to the raw material you were working with. For example, if working with uranium dirt, acid was added in order to extract UO3. Uranium ingots were similarly treated with acids. When a drum of raw material arrived at the plant, a sample was taken and sent to the laboratory and analyzed for both its radioisotope and chemical composition. With this knowledge, materials from various shipments were mixed in differing amounts in order to achieve a final product with the desired isotope type and desired level of enrichment.

The particular incident of concern came to your knowledge in approximately mid 1986 when a supervisor informed the operators that they were going to discontinue working with a particular lot

University Environmental Health Foundation, Inc.
Pavilion J, 4th Floor
234 Goodman St., ML-536
University of Cincinnati Medical Center
Cincinnati, OH 45267-0536
Telephone: (513) 558-0350

of material, as it was found to be out of spec. Apparently, for approximately one year, there were tanks which, in retrospect, contained this out of spec material. You had been taking samples from these tanks on a regular basis. The tanks contained approximately 30,000 gallons, and there were at least four tanks and perhaps more containing this material. When obtaining samples, you wore a half-face dual-canister type air-purifying respirator, leather gloves, goggles, and coveralls. You had been fit tested for this particular respirator, and you showered twice daily at work. You told us that the particular plutonium content in the out of spec material should have required use of three pair of gloves, an air-supply respirator, and self-encapsulation because of concern with regard to radioactive exposure to the operator. There were two people who worked on this process each shift, and you informed us that you had been involved in the initial tank filling when the material first arrived at the Feed Materials facility.

Throughout your work at Fernald, you have memory of approximately five releases which were obvious because the process had to be shut down entirely. In addition, however, there were an unknown number of self-contained releases and, in general, you described a situation where such releases tended to go underreported.

The specific concern with regard to the plutonium exposure was heightened when in April, you were informed that your urinary plutonium level from a sample submitted in September, 1986, returned elevated. Although the results of this specimen showed a plutonium result which was only slightly above the detection limits for plutonium for the procedure, a subsequent urine study done some time later at the University of Waterloo, Ontario, Canada, showed plutonium levels that were nearly an order of magnitude, or 10 times greater. Westinghouse did perform an assessment of the internal dose based on a measured urinary plutonium level obtained through the US Testing Laboratory. There was an assumption that the exposure was an acute intake and that it occurred over only a relatively brief period of time. This assumption was based upon the fact that only one sample had measurable amounts of plutonium and that subsequent samples returned at levels below the detection level for the assay. There was also an assumption that half of the plutonium 239 material in the lung would be cleared to the blood stream over 10-100 days. Based on these assumptions, the amount of intake was calculated to be 1.4 nanoCuries of plutonium 239. Based on this number, it was estimated that you had received an effective dose equivalent of 26 mrem in the first year after the intake and 17 mrem in the second year after the intake. A committed dose equivalent was calculated to be 0.6 rem for the total body and 0.18 rem for the gonads, 1.14 rem for the marrow, 14.28 rems for the surface of the bone, 3.03 rems for the liver, and 0.09 rems for the lungs. Using the risk factor developed by the International Committee on Radiological Protection, that is 1.65 in 10,000 per rem of effective dose equivalent, it was estimated that you would have a 0.01 percent chance of getting a fatal cancer as a result of this assumed exposure. This represents a 1/10,000 lifetime risk.

On April 24, 1989, you returned to the Occupational Health Clinic in order to complete a physical examination and to have a number of laboratory studies. Results of that physical examination showed that your height was 68"; weight 191 lbs.; blood pressure 106/80; pulse 84 and regular; respiratory rate 16 per minute and unlabored. An examination, including examination of your head, eyes, ears, nose, mouth, throat, neck, skin, lymphatics, heart, lungs, abdomen, extremities, and screening neurologic examination was normal.

Results of a chemistry screen of a blood specimen showed all results were within normal limits including measures of calcium, phosphorus, various electrolytes in the blood, liver function, blood lipids, including cholesterol and triglycerides, body proteins, kidney function, screen for thyroid function, uric acid, glucose, and measures of both red cells and white cells in the blood.

A urine sample examined by routine urinalysis was also normal. A urine assay for Beta-2-microglobulin returned at less than 1 microgram per liter with the reference limit being anywhere from 0-370 micrograms per liter. This is a normal result.

Chest X-ray was performed and underwent both a routine reading as well as a specialized B-reading, looking for evidence of pneumoconiosis, or work-related lung diseases such as asbestosis and silicosis. Both the standard reading and B-reading were entirely normal.

The results of your breathing studies showed that although the forced vital capacity and FEV1, or the amount of air that you are able to breathe out of your lungs in one second were acceptable. The ratio between these two was reduced, giving evidence of moderate airway obstruction. It is my impression that this is most likely related to your history of cigarette smoking, and I would use this to urge you to discontinue smoking cigarettes. I am enclosing with this letter copies of all of your laboratory test results.

CLINICAL IMPRESSION: It is my medical opinion that you have shown laboratory evidence of exposure to plutonium sufficient for your urinary assay to exceed the detection limit on one occasion. In addition, however, a subsequent study showed considerably higher levels of plutonium in the urine, and it is unclear at this point which of these two studies is likely to be more accurate. I do think it is important to understand that even if the second estimate were correct and that your exposure were 10 times greater than previously calculated, this would still lead to an increased risk of fatal cancer during a 15-year period estimated to be only approximately 1 in 1,000 greater than that risk that already is considerable within the general population. However, it is difficult, if not impossible, to make meaningful estimates with regard to combinations of risks that would result from exposures not only to the plutonium during times in which measurements were not obtained but also to other radioactive substances and chemicals in your work as a chemical operator.

It is my opinion that there is insufficient data to allow us to make a meaningful estimate of how these various risks would interact and what your eventual risk of cancer might be. I would suggest that, based on the information that I have had an opportunity to review, although your risk is likely to be increased above that of the general unexposed population, I do not feel that this risk is so high that you should in any way consider altering your life and lifestyle other than to discontinue smoking cigarettes. I do feel, however, that it is medically prudent that you undergo an annual evaluation along the same lines as the one that we have recently completed, if only because we do not have sufficient information to be absolutely reassuring to you with regard to future health risks. Thus, I think medical prudence would dictate that based on your history of exposures through a number of recognized releases, not only to plutonium but also to other radioactive substances in combination with a variety of chemical exposures, statistically you are at increased risk for future development of cancer. It is my feeling that this risk is low but sufficient to warrant yearly medical evaluations.

So far, I have been unable to come up with a satisfactory plan for more carefully delineating your current whole body burden of plutonium. I do not feel that it is urgent to proceed on this but do plan to have specific recommendations for you in the near future.

Please let me know if you have any questions regarding the contents of this report or any of your laboratory test results.

Sincerely,

Douglas H. Linz, MD
Director

DHL/ghd

Ohio Bureau of Workers' Compensation

SELF INSURED OCCUPATIONAL DISEASE CLAIM APPLICATION

for payment of Lost Time Compensation and Medical Benefits

Claim Number (BWC Use Only)

- This form is to be used for Occupational Disease Claims as enumerated in O.R.C. 4123.68
- This form applies for both Lost Time Compensation and Medical Benefits
- The EMPLOYEE must complete and sign Part 1 IN DUPLICATE
- The EMPLOYER must complete and sign Part 2 IN DUPLICATE
- The completed form(s) should be sent to:
Ohio Bureau of Workers' Compensation, Claims Section, Columbus, Ohio 43215

PART I *(Items 1 through 17 are to be completed by the claimant) Please Print or Type*

PERSONAL

1 Employee's Name: Robert J CASEY — Social Security Number: 282-50-2637
2 Home Address (Street & Number): 1872 SUNSEt AV — Apartment Number: 3 — Telephone No. & Area Code: 513-421-7103
3 City, State, Zip Code: CiNciNNAti Ohio (45238) — County: HAM — Sex: ☒ Male ☐ Female
4 Marital Status: SiNGAL — Birth Date: 10-26-53 — Age: 35 — Number of Dependents: 1

EMPLOYMENT

5 Employer's Name: Westenhose Feed MAteriAL — Employer's Telephone No.: 738-6200
6 Employer's Address (Street & Number): PO. BOX 398704 — County: HAM
7 City, State, Zip Code: CiNciNNAti Ohio 45239 — Risk Number: — Length of time on job in which disease occurred: 4 yer.
8 Your Occupation (Job & Title): ChemenCAL Opert. — Manual Number:

ILLNESS / DISEASE INFORMATION

9 Date Symptoms 1st Appeared: 9-23-1988 — Date Reported to Employer: 6-2-87 — Last Date Worked: N/A — Date Returned to Work: N/A
10 Date Diagnosis was made: 1-11-89 — Type of Work Returned to: Chemeah Cperater
11 Attending Physician (Name & Address): LiNDA S. FORST M.D
12 2450 Kipling AVENUE
CiNciNNAti Ohio (45239)

13 Describe the substance and details as to how you were exposed to the substance and type of work you were doing when the disease began (PLUTONIUM-239) WAS NOT WEARING The PROPER SAFty Egement to hANdah out of Spec. MATeriAh ct PLutonium. ~~with~~ witch CompANY DiD not SupLy.

14 Give the exact nature of the disease and part(s) of body affected (i.e. dermatitis of right hand, conjunctivitis, left eye, etc.)

	Nature of Disease	Part of Body		Nature of Disease	Part of Body
1.			3.		
2.			4.		

BWC Use Only

15 Were you exposed to the substance, which in your opinion caused this disease, in previous employments?
☐ YES ☒ NO If yes give name(s) and address(es) of employer(s) and date(s) employed (attach sheet if necessary)

Name ______ From ______ to ______

Name ______ From ______ to ______

16
A. Did you receive your wages during disability. ☒ Yes ☐ No
B. Have you previously suffered from the disease for which this application is made ☐ Yes ☒ No
C. Have you ever filed a previous application with the Bureau or Industrial Commission for this OR for other diseases. ☐ Yes ☒ No
(If yes, give claim number(s))
D. Have you suffered from any other diseases ☐ Yes ☒ No
(If yes, give details, dates of treatment, name and address of doctor. Attach separte sheet if necessary)

CERTIFICATION

17 **READ CAREFULLY BEFORE SIGNING**—I hereby apply for recognition of my claim under the Ohio Workers' Compensation Act for this exposure and/or condition which I did not purposely contract and request payment as provided under the Act for compensation and/or medical expenses as allowable on this form.

By signing this Application I expressly waive all provisions of law which forbid any person, persons, or medical facility who heretofore did or hereafter may medically attend, treat or examine me or who may have information of any kind which may be used to render a decision in my claim from disclosing such knowledge or information to the Bureau of Workers' Compensation, Industrial Commission, or the herein named employer.

To expidite this claim, if it is allowed, I waive any notices to which I may be entitled for hearings. Direct payment of the provider of any medical services is authorized.

1. ______
(If Applicant signs by mark, two witnesses must sign here)
2. ______

X Robt J Casey
Signature of Applicant (if unable to sign, make mark)
Date 6-28-89

Do Not Use This Column

- Claim No.
- Claimant Name
- Filing Date
- Last Date Worked
- Return to Work Date
- Date of Death
- Full Weekly Wage
- Average Weekly Wage
- Cit. Coun/Acc. Loc.
- Cit. Sx/Mar St./Age
- Dependents
- Occ./Job Time
- Acc. Time
- Claimant Rep.
- Nature of Injury
- Part of Body
- Source of Injury
- Exposure Type
- Wages/Sick W./Org.
- Received BWC
- Date Coded
- Coded By
- Manual No.
- Risk No.

BWC 4402 (Rev. 9/83)

[illegible]
[illegible]
of Ohio

PO Box 398704
Cincinnati, Ohio 45239 8704

(513) 738 6200

WMCO:Q&S(D):89-514
July 6, 1989

Mr. Robert J. Casey
1872 Sunset Avenue, # 3
Cincinnati, Ohio, 45238

REVISION OF INITIAL ASSESSMENT OF INTERNAL DOSE FROM EXPOSURE TO PLUTONIUM MATERIALS

Ref.: ASSESSMENT OF INTERNAL DOSE FROM EXPOSURE TO PLUTONIUM MATERIALS, WMCO:OSH((ODI):88-489, dated 12/11/88.

Dear Mr. Casey,

In preparing your exposure history report, it was found that the intake reported as 1.4 nCi was incorrectly converted to units of Bequerels (Bq) in calculating the committed organ doses shown in Table 2 of the referenced document. The intake shown in that table should be 5.15 E+01 Bq, not 5.7 E+01 Bq.

Since a revision of part of the previously issued report was being made, it was decided to also recalculate the committed effective dose, using the newer methodology of ICRP 48 instead of ICRP 30 to calculate dose. The ICRP (International Commission on Radiological Protection) publishes the recommended technical procedures and practices for limiting and assessing exposures due to radioactive materials. ICRP 48, Metabolism of Plutonium and Related Elements, is the latest publication which addresses the dosimetry of plutonium. It differs from ICRP 30 only in that ICRP 48 assumes the material to leave the bone, liver, and gonads about twice as fast as was previously thought and presented in ICRP 30. The value reported to you in the original report did not change significantly when calculated with the ICRP 48 methodology; it is still 0.6 rem committed effective dose equivalent.

The correct organ doses are shown in Table 2 of the attached page.

S. L. Hinnefeld
Manager, Q&S Dosimetry

RWK

Attachment

c: A. Bassettt, DOE-ORO
T. C. Crisler
J. A. Grumski
J. A. Reafsnyder, DOE-FMPC

Central Files
Dosimetry Files

WMCO DOSIMETRY REPORT 06-Jul-89

ATTACHMENT 1.
INTERNAL DOSE ASSESSMENT # 2991-RJC-01B

Table 1. Plutonium Bioassay Results.

LASTNAME	BADGE #	SAMPLE TYPE	DATE	RESULTS (dpm/sample) Pu-238	Pu-239	SAMPLE VOL (ml)	LABORATORY
Casey, R. J.	2991	Urine	13-Oct-86	< MDL	4.11E-02	8.00E+02	U.S. TEST
Casey, R. J.	2991	Urine	04-May-87	< MDL	< MDL	8.57E+02	U.S. TEST
Casey, R. J.	2991	Urine	05-May-87	< MDL	< MDL	4.28E+02	U.S. TEST
Casey, R. J.	2991	Fecal	16-Jul-87	< MDL	< MDL	1.42E+02	U.S. TEST

The MDL for Pu238 and Pu-239 is 2.0E-02 dpm/sample for urinalysis and 2.0E-1 dpm/sample for fecal analysis.

Table 2. 50-year Committed Dose Equivalents.

Target Organ	Weight Factor w	Source Organ	NOD (d/Bq) d	Intake (Bq) I	SEE (MeV/g-d)	Organ Dose, H (Rem)	Weighted Effective Dose, H (Rem)
Gonads	0.25	Gonads	6.57E+04	5.15E+01	3.0E+00	1.6E-01	4.1E-02
Red Marrow	0.12	trab. bone	3.07E+07	5.15E+01	3.4E-02	8.6E-01	1.0E-01
lungs	0.12	lungs	1.03E+06	5.15E+01	1.0E-01	8.5E-02	1.0E-02
Bone surface	0.03	cort. bone	3.07E+07	5.15E+01	2.1E-01	5.3E+00	1.6E-01
Bone surface	0.03	trab. bone	3.07E+07	5.15E+01	2.1E-01	5.3E+00	1.6E-01
ULI wall	0.06	ULI wall	2.39E+04	5.15E+01	2.3E-03	4.5E-05	2.7E-06
LLI wall	0.06	LLI wall	4.41E+04	5.15E+01	3.8E-03	1.4E-04	8.3E-06
liver	0.06	liver	4.04E+07	5.15E+01	5.8E-02	1.9E+00	1.2E-01
50-year Committed Effective							5.89E-01

Weighting factors and SEE values from ICRP 30.

The
Ohio Medical Claims
Service Bureau
P. O. Box 387
Loveland, Ohio 45140
(513) 489-1573

SERVICES RENDERED TO:

Robert J. Casey
944 Summit Avenue
Cincinnati, OH 45205

SERVICES RENDERED BY: R. Michael Kelly, M.D., M.P.H.

DATE OF SERVICE	PROCEDURE CODE	DESCRIPTION & LOCATION	CHARGE
10/3/87	90020	Comprehensive Exam.-Office	$120.00
10/3/87	94010-26	PFT Interpretation	30.00
10/3/87	94010	PFT Basic	70.00
10/3/87	76140	CXR	30.00

TOTAL AMOUNT DUE: $250.00

DIAGNOSIS:

PLEASE MAKE CHECKS PAYABLE TO: R. Michael Kelly, M.D., M.P.H.
Fed. ID# 31-1185910

PLEASE BE ADVISED THAT THIS COMPANY HAS BEEN RETAINED BY DR. KELLY IN COLLECTION OF ALL HIS PRIVATE PRACTICE MEDICAL ACCOUNTS. YOUR PROMPT REMITTANCE OF THE ABOVE ITEMIZED STATEMENT WILL BE APPRECIATED.

2nd REQUEST

DATE	REFERENCE	DESCRIPTION	CHARGE	CREDITS PAYMENT	CREDITS ADJ.	CURRENT BALANCE	PREVIOUS BALANCE	NAME

This is your RECEIPT for this amount ▲

▲ This is a STATEMENT of your account to date

Date of Service ______

PATIENT ______

S.S. # ______

	CODE NEW	CODE ESTAB.	FEE
1. OFFICE VISITS			
Brief	90000	90040	____
Limited	90010	90050	____
Intermediate	90515	90060	____
Comprehensive	90020	90080	____
Legal Report/Consult.		90899	____
2. DIAGNOSTIC EVALUATION			
Limited	90010	90050	____
Intermediate	90515	90060	____
Comprehensive	90020	90080	____
3. HOSPITAL SERVICES			
Limited		90250	____
Intermediate		90260	____
Comprehensive		90280	____
4. PROCEDURES			
Chest X-Ray B-Reading		76140	____
Chest X-Ray w/Interp		71020	____
EKG w/Interp		93000	____
Hemacult		82270	____

	CODE ESTAB.	FEE
4. PROCEDURES (Cont)		
Spirometry:		
PFT Interpretation	94010-26	____
PFT Basic	94010	____
Diffusion Studies	94725	____
Urinalysis	81000	____
Other ____	____	____
5. SPECIAL REPORTS		
Record Review	90699	____
Insurance	90010	____
Permanent Partial Eval.	90060	____
Lit. Rev./Tox Subst. Search	____	____
6. CONSULTATION	90699	
Group	____	____
Individual	____	____
Other ____	____	____
7. ADMINISTRATIVE REPORT		
Document Transmittal	99090	____
Preparation of Report	99080	____
Other ____	____	____

8. OTHER ______

DIAGNOSIS ______

WORK RELATED? ☐ YES ☐ NO ______

RETURN ______ Days ______ Weeks ______ Months NEXT APPT ______ DAY ______ MONTH ______ DATE ______ TIME ______ A.M. P.M.

INSURANCE CARRIERS: This form has been adopted to keep paperwork costs down. If any additional forms or itemization is required they will be completed upon the receipt of $15.00.

INSURANCE CLAIMS HANDLING — Procedures explained on back of pink copy. Keep this record to use for Income Tax and Insurance Filing.

TODAY'S CHARGES ______

I hereby authorize the undersigned physician to release any information necessary to process this form. I authorize and direct my insurance company to issue payments directly to the physician for services rendered.

Signature ______

PATIENT DISABILITY STATEMENT

☐ Seen in office for medical consultation today.

☐ Disabled ☐ Partially disabled

____/____/____ Thru ____/____/____

☐ OK To Return To Work On:

____/____/____

Dr. Sig. ______ M.D.

GREATER CINCINNATI OCCUPATIONAL
HEALTH CENTER
2450 KIPLING AVENUE SUITE 203
CINCINNATI, OHIO 45239
TELEPHONE: (513) 541-0561
FED. I.D.# 31-1067898

☐ R. Michael Kelly, M.D., M.P.H.
LIC. #51250
☐ D. Ann Middaugh
LIC. #052391

08193

25

11/3				Robert Casey
date	charge	payment	balance	name

OFFICE VISITS	NEW	EST	FEE
brief	90000	90040	
limited	90010	90050	
intermediate	90515	90060	
comprehensive	90020	90080	
DIAGNOSTIC EVAL			
limited	90010	90050	
intermediate	90515	90060	
comprehensive	90020	90080	120
HOSPITAL SERVICES			
limited		90250	
intermediate		90260	
comprehensive		90280	

PROCEDURES		FEE
cxr/B read	76140	30
cxr/interpret.	71020	
EKG w/interpret	93000	
hemacult	82270	
PFT Interpret	94010-26	30
PFT basic	94010	70
U/A	81000	
influenza	90724	
ppd	86580	
pneumovac		

Michael Kelly, MD, MPH
2450 Kipling Suite 106
Cincinnati, Ohio 45239
853-5076,(762-0757)

DIAGNOSIS Pulmonary impairment : Shortness of breath

SIGNED FED ID# 31-1185910 LIC# 51250

DATE	REFERENCE	DESCRIPTION	CHARGE	CREDITS PAYMENT	CREDITS ADJ.	CURRENT BALANCE	PREVIOUS BALANCE	NAME
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]		

This is your RECEIPT for this amount ▲

▲ This is a STATEMENT of your account to date

	CODE NEW	CODE ESTAB.	FEE
1. OFFICE VISITS			
Brief	90000	90040	15–
Limited	90010	90050	
Intermediate	90515	90060	
Comprehensive	90020	90080	
Legal Report/Consult.		90699	
2. DIAGNOSTIC EVALUATION			
Limited	90010	90050	
Intermediate	90515	90060	
Comprehensive	90020	90080	
3. HOSPITAL SERVICES			
Limited		90250	
Intermediate		90260	
Comprehensive		90280	
4. PROCEDURES			
Chest X-Ray B-Reading		76140	
Chest X-Ray w/interp		71020	
EKG w/interp		93000	
Hemacult		82270	

	CODE ESTAB.	FEE
4. PROCEDURES (Cont).		
Spirometry:		
PFT Interpretation	94010-26	
PFT Basic	94010	
Diffusion Studies	94725	
Urinalysis	81000	
Other		
5. SPECIAL REPORTS		
Record Review	90699	
Insurance	90010	
Permanent Partial Eval.	90060	
Lit. Rev./Tox Subst. Search		
6. CONSULTATION	90699	
Group		
Individual		
Other		
7. ADMINISTRATIVE REPORT		
Document Transmittal	99080	
Preparation of Report	99080	
Other		

8. OTHER

DIAGNOSIS

WORK RELATED? ☐ YES ☐ NO

RETURN: ______ Days ______ Weeks ______ Months NEXT APPT. ______ DAY ______ MONTH ______ DATE ______ TIME A.M. P.M.

Date of Service [illegible]

PATIENT [illegible]

S.S. # [illegible]

INSURANCE CARRIERS: This form has been adopted to keep paperwork costs down. If any additional forms or itemization is required they will be completed upon the receipt of $15.00.

INSURANCE CLAIMS HANDLING — Procedures explained on back of pink copy. Keep this record to use for Income Tax and Insurance Filing.

TODAY'S CHARGES 15–

I hereby authorize the undersigned physician to release any information necessary to process this form. I authorize and direct my insurance company to issue payments directly to the physician for services rendered.

Signature

PATIENT DISABILITY STATEMENT

☐ Seen in office for medical consultation today.

☐ Disabled ☐ Partially disabled

____/____/____ Thru ____/____/____

☐ OK To Return To Work On:

____/____/____

Dr. Sig. ______________ M.D.

GREATER CINCINNATI OCCUPATIONAL
HEALTH CENTER
2450 KIPLING AVENUE SUITE 203
CINCINNATI, OHIO 45239
TELEPHONE: (513) 541-0561
FED I.D.# [redacted]

☐ R. Michael Kelly, M.D., M.P.H.
LIC. #51250
☐ D. Ann Middaugh
LIC. #052391

08239

25

Roche Biomedical Laboratories
A subsidiary of Hoffmann-La Roche Inc.

SPECIMEN # [illegible]	TYPE	PRIMARY LAB [illegible]	REPORT STATUS

ADDITIONAL INFORMATION
[illegible]

PATIENT NAME [illegible]	SEX	AGE (YR. MOS.)
PT. ADD.		

DATE OF SPECIMEN [illegible]	DATE RECEIVED [illegible]	DATE REPORTED [illegible]	

CLINICAL INFORMATION

PHYSICIAN ID.	PATIENT ID.	

ACCOUNT
[illegible]

TEST	RESULT	LIMITS	LAB
[illegible]			

FOLD

PATIENT NAME [illegible]	PATIENT ID	SPEC NO [illegible]	SPEC DATE

BONE		ELECTROLYTES			HEART		LIVER				LIPIDS	
Calcium mg/dl (8.5-10.8)	Phosphorus mg/dl (2.5-4.5)	Sodium mEq/L (136-148)	Potassium mEq/L (3.5-5.5)	Chloride mEq/L (94-109)	LDH IU/L (100-250)	AST (SGOT) IU/L (0-50)	T. Bili mg/dl (0.1-1.2)	GGT (IU/L) (M 0-65) (F 0-45)	ALT (SGPT) IU/L (0-50)	Alk. Phos. IU/L (30-125)	Cholesterol mg/dl < 260	Triglycerides mg/dl (10-250)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

PROTEIN				KIDNEY		THYROID				MISCELLANEOUS		
T. Protein g/dl (6.0-8.5)	Globulin g/dl (1.5-4.5)	Albumin g/dl (3.5-5.5)	A/G Ratio (1.1-2.5)	BUN mg/dl (7-26)	Creatinine mg/dl (0.5-1.5)	T_4 µg/dl (4.5-12.5)	T_3 Uptake % (35-45)	Free T_4 Index (1.6-5.0)	TSH µIU/ml (0.5-5.0)	Uric Acid mg/dl (M 3.9-9.0) (F 2.2-7.7)	Glucose mg/dl <50 yrs. (65-115)	Iron µg/dl (40-180)
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]					[illegible]	[illegible]	

HEMATOLOGY															
RBC x 10^6/mm³ (M 4.3-5.9) (F 3.5-5.5)	HGB g/dl (M 13.9-18.0) (F 12.0-16.0)	HCT % (M 39-55) (F 36-48)	MCV µ³ (80-100)	MCH µµg (26-34)	MCHC % (31-37)	Platelets x 10^3/mm³ (140-440)	WBC x 10^3/mm³ (4.0-10.5)	Polys (45-75%) (1.5-6.0)	Bands (0-5%)	Metas (0%)	Lymphs (20-49%) (0.8-3.3)	Mono (0-10%) (0.0-0.8)	EOS (0-6%) (0-0.5)	BASO (0-2%) (0-0.1)	%
															ABSOLUTE VALUES

RESULTS ARE FLAGGED IN ACCORDANCE WITH AGE DEPENDENT REFERENCE RANGES WHICH ARE SUMMARIZED ON THE BACK OF THIS REPORT
* A comment applied to this test has been printed in the body of the Report.

DUPLICATE REPORT

Roche Biomedical Laboratories
a subsidiary of Hoffmann-La Roche Inc.

SPECIMEN #	TYPE	PRIMARY LAB	REPORT STATUS	
[illegible]			[illegible]	

ADDITIONAL INFORMATION
[illegible]

CLINICAL INFORMATION

PHYSICIAN ID.	PATIENT ID.	

PATIENT NAME	SEX	AGE (YR. MOS.)
[illegible]		

PT. ADD.

ACCOUNT
[illegible]

DATE OF SPECIMEN	DATE RECEIVED	DATE REPORTED	
[illegible]	[illegible]	[illegible]	

TEST	RESULT	LIMITS	LAB
[illegible]			
[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	

FOLD

PATIENT NAME	PATIENT ID	SPEC NO	SPEC DATE

BONE		ELECTROLYTES			HEART		LIVER				LIPIDS	
Calcium mg/dl (8.5-10.6)	Phosphorus mg/dl (2.5-4.5)	Sodium mEq/L (135-148)	Potassium mEq/L (3.5-5.5)	Chloride mEq/L (94-109)	LDH IU/L (100-250)	AST (SGOT) IU/L (0-50)	T. Bili mg/dl (0.1-1.2)	GGT (IU/L) (M 0-65) (F 0-45)	ALT (SGPT) IU/L (0-50)	Alk. Phos IU/L (30-120)	Cholesterol mg/dl < 300	Triglycerides mg/dl (10-200)

PROTEIN				KIDNEY		THYROID				MISCELLANEOUS		
T. Protein g/dl (6.0-8.5)	Globulin g/dl (1.5-4.5)	Albumin g/dl (3.5-5.5)	A/G Ratio (1.1-2.5)	BUN mg/dl (7-26)	Creatinine mg/dl (0.5-1.5)	T_4 µg/dl (4.5-12.5)	T_3 Uptake % (30-45)	Free T_4 Index (1.0-5.8)	TSH µIU/ml (0.5-6.0)	Uric Acid mg/dl (M 3.9-9.0) (F 2.2-7.7)	Glucose mg/dl <50 yrs (60-115)	Iron µg/dl (40-180)

HEMATOLOGY															
RBC $x 10^6/mm^3$ (M 4.3-5.8) (F 3.5-5.5)	HGB g/dl (M 13.0-18.0) (F 12.0-16.0)	HCT % (M 39-55) (F 36-48)	MCV μ^3 (80-100)	MCH µµg (26-34)	MCHC % (31-37)	Platelets $x 10^3/mm^3$ (140-440)	WBC $x 10^3/mm^3$ (4.0-12.5)	Polys (45-75%) (1.5-8.0)	Bands (0-5%)	Metas (0%)	Lymphs (20-45%) (0.8-3.2)	Mono (0-10%) (0.0-0.8)	EOS (0-6%) (0-0.5)	BASO (0-2%) (0-0.1)	%
															ABSOLUTE VALUES

RESULTS ARE FLAGGED IN ACCORDANCE WITH AGE DEPENDENT REFERENCE RANGES WHICH ARE SUMMARIZED ON THE BACK OF THIS REPORT

* A comment applied to this test has been printed in the body of the Report.

DUPLICATE REPORT

Greater Cincinnati Occupational Health Center
AT PROVIDENCE HOSPITAL

Suite 203
Providence
Medical Plaza

2450 Kipling Avenue
Cincinnati, Ohio 45239
(513) 541-0561

Robert J Casey
944 Summit

Cincinnati OH 45205

ACCOUNT NUMBER: 11959

STATEMENT DATE: 04 28 89

DATE OF SERVICE		DESCRIPTION	AMOUNT
		BALANCE FORWARD	$0.00
09 28 88	90050	Limited Exam/Established Patients	$30.00
10 18 88	90040	Brief Office Visit/Established Patients	$15.00

BALANCE DUE: $45.00

University Occupational Medicine Group of Cincinnati
Consultants in Occupational and Environmental Health
Pavilion J — 4th Floor
234 Goodman St., ML-536
Cincinnati, OH 45267-0536
Tax ID: 31-1175078

Invoice No.: 1819
Invoice Date 6/12/89

Robert J. Casey
1872 Sunset Avenue
Cincinnati, OH 45238

PLEASE MAKE CHECK PAYABLE TO: University Environmental Health Foundation, Inc.
Return check and one copy of this invoice

Date of Service	Service Performed	Fee
	Professional services rendered by Dr. Douglas Linz	
2/17/89	History and physical exam	$ 125.00
4/24/89	Office visit	25.00
	PFTs	52.00
	PA & Lateral chest x-ray, B-reading	48.00
	Chem 23	11.00
	CBC with diff	8.00
	Urinalysis	8.00
	Beta $_2$ Microglobulin	45.00
		$ 322.00

original - white remittance copy - green invoice file copy - canary business office copy - pink accounts receivable copy - goldenrod

ATTACHMENT 5

Westinghouse Materials Company of Ohio

EMPLOYEE BULLETIN

September 9, 1988

POOS UPDATE

TO ALL EMPLOYEES:

(The following information has been released to the local media.)

Westinghouse is continuing to evaluate analytical data that indicates that some FMPC employees may have been contaminated with plutonium.

Results received in August from urinalysis testing of eight FMPC employees indicated detectable levels of plutonium. These eight employees and three others had submitted the urine samples in March, April and May of 1988. When the results received in August showed positive results on the eight workers, fecal samples for all 11 workers were collected and submitted for laboratory analysis. At the same time, each of the 11 submitted two additional urine samples for testing at two separate outside laboratories.

Results from the fecal samples were received September 8 and indicated positive results for four of the 11 workers, including one who had not tested positive in the earlier urine sample. Results from the two follow-up urine samples have not yet been received.

Westinghouse is proceeding on the assumption that the analyses are correct and has restricted the affected employees from any further work around radioactive material until additional testing and evaluation can be completed.

The four employees whose fecal samples tested positive will be sent for in vivo (whole body count) monitoring as a precaution. It is unlikely, however, that in vivo monitoring will detect the plutonium, because the bioassay results collected thus far indicate plutonium presence at well below the levels detectable via in vivo monitoring.

Preliminary rough calculations of the effective dose equivalent from data reported for the fecal samples received September 9 indicate levels of exposure well below the current U. S. Department of Energy limits.

Plutonium is considered more hazardous than uranium and when inhaled remains

REMOVAL DATE: September 23, 1988

HUMAN RESOURCES REVIEW: im

[illegible]

in the body considerably longer than uranium. The levels of plutonium found in the affected employees are a matter of concern, but would not constitute a health problem unless they continued to be exposed and, consequently, assimilated higher levels of plutonium.

Exposure to plutonium at the FMPC would have come from working with Plutonium Out of Specification (POOS) material in the plant's chemical processing areas. POOS material contains higher concentrations of plutonium (about 10 parts per billion) than is acceptable in recycled uranium normally handled at the FMPC.

The POOS material came to the FMPC for other U. S. Department of Energy sites in the form of residues which had been reclaimed from nuclear reactors. The material was processed through the FMPC refinery to make uranium trioxide (UO3) or orange oxide, which is eventually converted to uranium metal. Orange oxide produced before the 10 ppb limit was established in January 1986, has been inventoried and marked and is no longer used in the process of making uranium metal.

Most of the POOS processing work had been done before June of 1987. The only work involving POOS material being done now is in Plant 4, where dust collectors for a reaction bank which had contained POOS material are being cleaned. It is unknown whether any POOS material is contained in those dust collectors, but the work is being done as though POOS materials are present as a precaution.

It is anticipated that samples will be collected and analyzed for additional FMPC employees who may have been involved in POOS work.

Gordon F. Beecher
Manager, Human Resources

ATTACHMENT 6

Westinghouse Materials Company of Ohio

EMPLOYEE BULLETIN

September 15, 1988

SUSPECTED POOS MATERIAL DISCOVERED IN WASTE OPERATIONS SAMPLING

TO ALL EMPLOYEES:

WMCO is reviewing data and has taken some precautionary measures after the identification of 11 drums of waste material that may contain concentrations of plutonium above the current DOE acceptable level of 10 parts per billion.

At the FMPC, each drum of waste is checked to assure that no standing liquid is present as a step in the preparation of waste for off-site shipment. The presence of standing water is not permitted in off-site waste shipments.

Drums are brought to the sampling line from an outside storage pad grouped by the material code stenciled on the drums. An operator inspecting the waste discovered that the material in the 11 drums was not consistent with material in similarly labeled drums. The material was sampled and quarantined pending chemical analysis. Subsequent analysis indicates that the material may contain higher than acceptable levels of plutonium.

As a precautionary measure, about 35 persons who work in the area have been sent for bioassay testing (urine sampling) to assure that there was no uptake of plutonium. The 11 barrels remain quarantined pending further review of the laboratory analyses.

Inspection of waste material prior to off-site shipment is conducted in a controlled area equipped with continuous air monitoring devices, and other precautionary radiological testing is conducted regularly in that area.

We are tracing the history of these and all similar materials stored on Pad 1. Sampling operations have been suspended pending completion of material history and procedure reviews.

W. M. Britton
WMCO Executive Vice President

REMOVAL DATE: September 22, 1988

HUMAN RESOURCES REVIEW: ______

[illegible]

Sally Abney
July 27, 1989

ATTACHMENT 7

My husband has asked me to write something from the spouse's point of view when the partner works at the Fernald feed materials plant.

I have often told Jesse, my husband, that I would like the chance to talk to someone, such as John Glenn, about the wife's point of view. It is hard for a "vocal" person to be quiet!

Yet, Jesse has now asked me to write something and I am finding it a very difficult assignment. The easy part is those things that are of contractural nature - Those things that I believe should be given to the workers at Fernald in exchange for working there.

1. Sick days - As of now workers go to work sick because they do not get paid unless they miss at least a week. "They" talk safety but the sick leave policy encourages workers to work at less than peak performance.

2. Cancer, health, and life insurance that is kept in effect during long illness that COULD be due to Fernald employment. We are tired of hearing that there is no PROOF that uranium and plutoium cause cancer. I think it is generally accepted that they do.

3. The workers at Fernald are basically employed by the government and paid by a middle man. The government is in charge of who runs the plant. Yet, if the managing company is changed- the workers' retirement system is changed. On paper that may not sound bad. In reality it is a stressful situation. I feel the workers at these "government" plants should be in the federal retirement system. If the land, building, and even the ash trays belong to the federal government then so do the workers and the responsibility for their welfare!

4. It needs to be recognized that many people do dangerous jobs because they have to work. The attitude that "if you don't like it - go somewhere else" is not realistic. People have to eat, make payments, and survive the best they can. Companies can make it better.

The above part was easy to write. But, Jesse said he was told to have me write what effect Fernald has on the family. This is a painful and very private problem. It's a problem that is very rarely discussed. We make jokes about it in the family and brush off friends with jokes. Very few are allowed to see the fear or the guilt.

Guilt? How does one not feel guilt when I know my husband has been contaminated and I am not pleading with him to quit? How can I equate paying the bills to my husband's health? Of course, I tell myself that if he quit and had no income his lack of self esteem, the money problems, and the stress would kill him just as quickly as U 235. My husband is a proud man and takes his responsibilities seriously. We are caught in a web.

Fear? We try to push the fear to back of our minds. Lots of people work in dangerous professions - so do the people who work at Fernald. The publicity has made it worse. My son wonders why his father has to work there. He hears the news, reads the papers, and knows his father has high levels of uranium and plutonium. He knows fear.

Concerned friends read the latest newspaper report and ask about Jesse. The look in their eyes - the concern in their voice drives a daggar through my soul as I answer, "Oh, he's fine. The press overdoes everything! If someone gets a hangnail out there they have to report it!"

"God, please let me be right!"

I believe that plants dealing with nuclear energy are necessary. I believe men must work at them - just like coal miners must go into the mine, firemen into the fire, and policemen into the line of fire. The spouses of these men learn to live with fear.

The spouses at Fernald have also learned to live with fear but I believe that the stress can be reduced by involving the worker in planning and policy making and by providing the worker with some sense of security (numbers 1 through 4 that I listed earlier). He also deserves to know the truth about his surroundings.

Closing Fernald will not solve the workers' problems; closing will only add to their already stressful and uncertain lives.

Respectfully,

Sally Abney

Sally Abney

Testimony Before U.S. Senate
Committee on Governmental Affairs

by Alice Stewart, M.D.

August 2, 1989

My name is Alice Stewart. I am a physician and epidemiologist with over 50 years of clinical, teaching and research experience. During this time, I have published in excess of 300 papers on cancer effects of low-level ionising radiation. I am currently a Senior Research Fellow at Birmingham University, U.K., and the principal investigator of the Three Mile Island Public Health Fund's ("Fund's") DOE cohort Study.

I.
A BRIEF HISTORY OF DOE HEALTH AND MORTALITY STUDIES

Today there is general recognition of the research potential of the radiation doses which are routinely collected from all workers in the nuclear industry. But this has not always been so. The original purpose of these records was to prevent trouble by keeping annual doses of individuals below maximum permissible levels.

Historically, the United States Department of Energy ("DOE") has maintained the largest nuclear work force (in the free world) of some 600,000 workers. Because of systematic data collection in the routine operation of the weapons facilities, this work force constitutes the world's largest and most carefully documented resource for studying health effects of ionizing radiation.

The history of scientific inquiry by DOE has been mixed, to say the least. Throughout its existence this department has maintained administrative control over all studies and exclusive possession of all associated scientific data with no opportunity for independent analyses. Furthermore, a firm belief in the harmlessness of low level radiation and a deep seated fear that any evidence of harmful effects would "destroy" the nuclear weapons industry has made the DOE both painfully slow to investigate the health effects of radiation exposure and both rigid and unimaginative in its approach. There have also been numerous charges that DOE has deliberately suppressed or retarded the advancement of knowledge and several activities which have confirmed this belief.

In 1964, AEC put Dr. Thomas Mancuso of the University of Pittsburgh in sole charge of a study of the health and mortality of all workers in AEC nuclear facilities, while still insisting that the probability of there being any effects of low level radiation was so remote that there was no expectation of any positive findings.

Mancuso then proceeded to engage in a Herculean task of collecting and organizing data within the DOE system and relating radiation exposures to mortality and occupational status. By his pioneering efforts in using social security administration data, Dr. Mancuso was largely successful and established the methodology which is still in use by present day DOE radiation epidemiologists.

The story of DOE's treatment of Dr. Mancuso is a troubling one. I say this as a first hand observer and scientist who believes that the injection of "political" concerns into the scientific is fraught with danger. For Dr. Mancuso who was in sole charge of the DOE health and mortality study program, and who had worked for 12 years masterminding the collection of data for the entire DOE system to be summarily dismissed was totally unreasonable and a shocking thing. This action created consternation among the public and the scientific community and precipitated a Congressional investigation into the circumstances surrounding his departure. The ensuing investigation found that he was terminated without proper justification and led to the creation an interagency task force (in the Carter Administration) which recommended, among other things, that the health and mortality study program be removed from DOE and transferred to the Department of Health and Human Services. The basis of this recommendation was the finding of an inherent conflict of interest insofar as the DOE was both a producer of nuclear weapons and an investigator into health effects of its own workers. I understand that exactly the same conflict is the subject of pending legislation in the Congress today and has been candidly and courageously addressed by the new Secretary of Energy, Secretary Watkins, in his recent statements to the Congress.

The first evidence of ill effects of low level radiation came not from Mancuso but from a study of occupational mortality by Dr. Milham in Washington State which showed that the proportion of cancer deaths was unduly high for Hanford workers. By this time (1974) Mancuso had created a central register of DOE workers and was linking radiation doses into death certificate data via social security death benefits claims. But it was not until 1975 when Mancuso sought the help of two British epidemiologists (Stewart and Kneale) that further evidence of cancer effects of low level radiation was obtained.

Even before the first report of this evidence was in print, Mancuso had been terminated and several "in house" studies of separate DOE cohorts were about to take the place of the one fully integrated study of all DOE workers.

Though DOE made strenuous efforts to suppress the Mancuso data base they were unable to retrieve the copy of Hanford data which had gone to England with Stewart and Kneale, or to prevent Mancuso from updating the deaths in this cohort. Nor was it possible to stop Kneale from discovering that although Hanford workers had a reduced risk of dying for all natural causes (health worker effect) they also had a cancer risk which remained dose related however small the dose.

Briefly, the principal defects of the present DOE research include, inter alia, the following:

First, an inability to follow Kneale's lead and use appropriate markers of safe and dangerous occupations before proceeding with a relative risk analyses;

Second, a continuing inability to recognize the statistical requirements for a proper test of an internal healthy worker bias; and

Third, a continuing inability to treat flexibly different types of cancers.

II.

ATTEMPTS BY THE TMI PUBLIC HEALTH FUND TO OBTAIN DOE RADIATION AND OCCUPATIONAL DATA

Over the past 2-1/2 years, the TMI Public Health Fund has made repeated efforts to obtain radiation exposure and occupational data from DOE. The Fund was created by settlement of certain litigation arising out of the 1979 TMI accident. The Fund is under the continuing supervision of a federal judge in Harrisburg.

In September, 1986, the Court approved, pursuant to the Settlement Agreement between the parties involved in the TMI class action litigation, an epidemiologic study of low level radiation exposure of DOE workers. The study was undertaken to carry out a provision of the Settlement Agreement which required that part of the $25 million settlement fund be used to study the health effects of low level radiation. This provision was included in the settlement as a way to clarify the health effects of the 1979 TMI accident.

After much consideration, the TMI Fund recommended to the Court that an epidemiologic study of cancer among DOE workers be approved. Under the Settlement Agreement, the study was reviewed by an eminent scientist, a Nobel Laureate in medicine and an expert in the health effects of radiation, Dr. Baruch Blumberg of the Fox Chase Cancer Institute, to assure the scientific validity of the proposed study and to pass on the credentials of the proposed researchers. Dr. Blumberg was independent of either side of the litigation and was chosen by both sides, and approved by the Court to review the merits of any scientific study proposed by the Fund. Dr. Blumberg approved the study on scientific grounds and recommended that the Court approve the study. The Court subsequently adopted the recommendation of the independent scientific advisor to the TMI settlement. The proposed principal investigator of the Fund, Dr. Alice Stewart of Cambridge, England is an eminent epidemiologist with a worldwide reputation, and, ironically, was a DOE consultant on the original health and mortality studies of the Department.

In response to the Fund's requests, the DOE has raised three principal objections to provision of the information:

(a) violations of the federal Privacy Act, 5 U.S.C. 552a;

(b) violations of restrictive agreements entered into by the DOE with certain states form whom death information was procured; and

(c) interference with the "deliberative processes" of the Department.

None of these objections has merit. The federal Privacy Act has eleven exceptions to it, four of which apply to the request of the Fund. The alleged restrictive agreements either do not prohibit subsequent disclosure to bona fide researchers, were enacted under statutes which permit disclosure for scientific purposes, or are preempted by federal law. The "deliberative processes" of the agency are not abridged because the Fund seeks only computer compiled data and not agency work product, scientific analyses or mental impressions.

More recently, the DOE, as part of the ongoing shake-up and reorganization of the department, has proposed a presently ill-defined plan to make radiation exposure and death information of DOE workers available from an alleged comprehensive data repository to be established some time in the future by the DOE. Access to the depository will be determined by a committee of the National Academy of Sciences. The NAS committee plans to deliberate for a year on the issues of what types of researchers will be entitled to access and in what form data will be accessible. Current reports indicate that it will require five years and 36 million dollars to establish to data repository.

Conditioning of the request of the Fund on either or both aspects of the current DOE proposal is unnecessary, unjustifiable and will serve only to lead to further delay and interference with the Fund's access to data. The Fund's study has already been independently reviewed for scientific validity and the credentials of the researchers established. Furthermore, the study is under the supervision of a federal court and access to the data can be subject to a court order. In addition, the DOE presently maintains comprehensive data on 250,000 workers which is sufficient to start and substantially complete the Fund's study. According to the DOE, this information can be made available immediately. Finally, the DOE's proposed mechanism to provide bon fide researchers access to the worker data is fraught with potential for continued abuse by DOE and the retardation of scientific investigation with its concomitant deleterious impact on the public interest and public health.

Testimony Before U.S. Senate

Committee on Governmental Affairs

by Edward P. Radford, M.D.

August 2, 1989

My name is Edward P. Radford, and I received my M.D. degree from Harvard Medical School in 1946. I have spent my professional life in research and teaching. During my career from 1959 to 1965, I was in charge of the training program in Radiological Health at Harvard University School of Public Health, and later was Director of the Kettering Laboratory and in charge of training in occupational health at the University of Cincinnati. I was also from 1979 to 1983 the Director of the Center for Environmental Epidemiology at the University of Pittsburgh. I was a member of the first BEIR (Biological Effects of Ionizing Radiation) Committee appointed by the National Academy of Sciences, which reported in 1972. I was Chairman of the BEIR III Committee which issued its report in 1980. In 1983-84, I was a Visiting Professor at the Radiation Effects Research Foundation and worked on the study of the atomic bomb survivors.

I have carried out epidemiologic studies of workers occupationally exposed to a variety of hazardous agents including ionizing radiation. For example, I am currently working on a long-term study of the health effects of radon exposure on Swedish iron miners. I am presently a member of the Three Mile Island Public Health Fund Scientific Advisory Board.

Research on the effects of ionizing radiation on human health has had some unusual features that has set it apart from other similar research dealing with other environmental agents. Primarily these differences have arisen because of the establishment of the large government laboratories with responsibility not only for development of nuclear weapons and nuclear power facilities, but also for health research on ionizing radiation effects. These government laboratories, such as those at Los Alamos, Hanford and Oak Ridge, have been the recipients of a very large part of the funds provided by the U. S. government for research on health effects of ionizing radiation, according to the Libassi report in 1979. Support to universities for research has been comparatively small, and thus much of the research has been in direct control of government employees.

Most of the research in the government laboratories has been animal research, and these laboratories have never emphasized epidemiologic research involving human populations. To my knowledge the Department of Energy (DOE) does not have at this time a single person at any of the government laboratories with a doctoral degree in epidemiology, despite frequent offers in the past to recruit a senior epidemiologist by offering a very high salary. It is not surprising that government laboratory scientists serving on regulatory or review bodies put as much emphasis in determining human risks from radiation results of animal experiments as evidence drawn directly from irradiated human populations.

A crucial scientific issue where the animal data differ from human results has to do with effects of small repeated doses of radiation exposure to gamma rays, x-rays or most beta radiation, the kind of exposure experienced by workers in many nuclear plants or by the public living around nuclear weapons facilities. Based solely on results of animal experiments, various groups such as the United Nations Scientific Committee on the Effects of Atomic Radiation have decreed that such drawn-out radiation exposure is only one-third as effective in later producing cancers as the same dose given over a short period of time. Yet the human evidence available does not support this idea. Moreover, I have pointed out that the animal experiments on which this idea rests are incomplete, in that unlike the human condition they do not incorporate later exposure to cancer promoters. When animal studies have done so, the damage produced at low doses is made manifest, and the so-called "low dose rate reduction factor" does not exist. This is one example of the pseudoscientific way the nuclear establishment has used to minimize the risks of radiation exposure to workers and to the public.

Obviously the best way to determine cancer and other risks from low doses of ionizing radiation would be to study human populations exposed to such doses. One requirement to detection of these effects is that the population studied has to be as large as possible. This is the reason why the workers at the nuclear weapons and other DOE facilities are such a valuable epidemiological resource, certainly one of the most important in the world. The DOE senior staff believes that they should be the only organization to do the study of these workers, despite their shortage of professionals qualified for such work. But even more important is the propriety of having investigations carried out by an organization whose multi-billion dollar operations may possibly be affected by the results of the investigations. It is clear that the nuclear weapons industry would prefer to have the health effects research indicate negative results in these studies. Unfortunately, it is often easy to ensure negative results by inappropriate epidemiologic methods.

We are told that DOE will spend thirty-six million dollars to set up at Argonne Laboratory a new centralized Epidemiologic Data Repository, which will become up-to-date by 1994. This sum is many times the amounts spent on all epidemiologic research carried out by DOE up to the present. Meantime we have reason to believe that 250,000 workers (of the total of 700,000 DOE wants to catalogue) already have reasonably complete data already entered in computer files. The TMI Public Health Fund Scientific Advisory

Board is prepared to carry out an analysis of these 250,000 workers at virtually no expense to the government, but DOE has persistently blocked our efforts to obtain the data. Yet DOE has already agreed to make some unedited worker records available to the International Agency of Research on Cancer in Lyons, France!

The delays implicit in the DOE program currently proposed will mean that whatever results are obtained from this study of workers will be delayed at least ten years. We submit that the findings of this study are too important to the public and to the workers to permit such an unconscionable delay to occur, especially when the DOE and its predecessors have already had more than twenty-five years to get these studies done.

THE HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT

Testimony before the Senate Committee on Governmental Affairs
August 2, 1989

John E. Till, Ph.D., Chairman
Technical Steering Panel

The objective of the Hanford Environmental Dose Reconstruction Project (HEDR) is to reconstruct the doses that individuals received from radionuclides released to the environment from operations at the Hanford Site. The research is supported by the Department of Energy and is being performed by Battelle Pacific Northwest Laboratory; however, the project is directed by an independent Technical Steering Panel (TSP). The responsibility of the TSP is to direct all aspects of the study and to work closely with the public during the course of the project, soliciting their ideas and concerns and conveying the results of the research. It is expected that dosimetry from this project will be used by the Centers for Disease Control to determine if there is a correlation between exposure and thyroid disease among subjects who lived near the Hanford Site during the period of major releases.

The Hanford study is not the only major ongoing dose reconstruction project. Three other groups are currently carrying out dose reconstruction studies examining historical releases from nuclear weapons testing at the Nevada Test Site (NTS). The National Cancer Institute supports two projects and the Department of Energy supports the third.

The Hanford project evolved primarily from public concerns and was established thorough agreements between the Department of Energy, the States of Washington and Oregon, and Indian Tribes. For these reasons, the TSP believes that public credibility of our work is as much a goal as is scientific reliability. We are committed to taking unique approaches to public involvement and openness throughout the course of our work.

The TSP has been in existence for 15 months. I would like to share with you several key steps taken to date and to relate several problems that lie ahead.

At the outset, the TSP clearly established its authority to direct the study, not just to provide advice or oversight. Correspondence between the TSP and the Department of Energy documents the authority of the Panel. This assumption of authority to direct was the first evidence we presented to the public of the Panel's purpose and intent.

The TSP established its own budget, staff, and handles its own internal affairs. Panel members have contracts which vary according to their time and expertise. However the TSP is confronted with the stigma that funding is provided by The Department of Energy. In the future, strong consideration should be given supporting an independent steering panel through another agency. Such an arrangement would further strengthen the credibility of the panel as an independent entity.

Classification of information related to sources and amounts of radioactive substances released at Hanford a concern of the Panel. Although some members of the Panel are cleared to review these documents, we have requested that the Department of Energy expedite the declassification of information related to the study. Our request is currently pending at DOE and we expect an answer by the end of August. The Department's concurrence to declassify this information would be another major step in gaining the credibility of the public.

Perhaps the most important and most difficult step the TSP has taken is the commitment to the public that our work will be open and available. We encourage the public's presence at Panel meetings, subcommittee meetings, and work sessions. There are risks in taking this position. This unprecedented degree of openness carries with it a responsibility of the public to allow the scientific process to proceed undisturbed, and to understand the seriousness of misusing preliminary information or conclusions. Nevertheless, the TSP believes the participation of the public during the course of the study will significantly enhance acceptability and understanding of the final results.

We are establishing a clear record of public involvement. We advertise and conduct public meetings, maintain reading libraries, speak to civic organizations about the study, and regularly distribute mailings. A well defined track record of public information and involvement throughout the progress of our work is just as important as the accuracy of the scientific work itself.

The Hanford Project has been perhaps my most difficult personal challenge as a scientist. It is not the normal course of science to invite the public into one's office to conduct research. It is not the normal course of science to begin by assuming one's results are not credible and having to establish this credibility as part of the job. It is not the normal course of science to be responsible for communicating one's results to the public. However, I personally see these challenges as breaking new ground and as a major contribution to my profession.

The project also offers new challenges to the Department of Energy. It is an opportunity for the Department to consider new approaches to openness and public involvement. It is an opportunity for the DOE to carefully evaluate the importance of independent technical direction in studies where questions of conflict-of-interest may seriously cloud the results. It is also an opportunity for the Department to significantly advance the state-of-the-art of dose reconstruction and risk assessment.

In conclusion, we want to determine the most accurate estimates of potential doses to the public at Hanford. Nevertheless, if we carry out impeccable scientific research and it is not perceived as such by the public, we have not succeeded in our objective. We believe the research at Hanford may provide a model for DOE in the future as the Department addresses dose reconstruction, site cleanup, and health and safety improvements.

Thank you for this opportunity to share our experiences regarding this very important scientific project.

John E. Till, Ph.D., Chairman
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PHYSICIANS
FOR SOCIAL
RESPONSIBILITY

The U.S. Affiliate of International
Physicians for the Prevention of Nuclear War
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Statement of

Anthony Robbins, M.D.

for

International Physicians for the Prevention of Nuclear War

and

Physicians For Social Responsibility

before

The United States Senate

Committee on Governmental Affairs

August 2, 1989

Mr. Chairman and Members of the Committee, I am Anthony Robbins, a Professor of Public Health at the Boston University School of Public Health. I am the Treasurer of International Physicians for the Prevention of Nuclear War and a member of Physicians for Social Responsibility. In the past, I have served as the Executive Director of the Colorado Department of Health, and as Director of the National Insitute for Occupational Safety and Health. I am past President of the American Public Health Association.

I have two important observations to make regarding what we have learned in the last two years about production of nuclear weapons in the United States. First, we have an important opportunity to improve scientific understanding of how radiation affects people (I will return to this point in a moment). Second, we face a public health emergency in and around the plants that have built nuclear weapons.

I will not take this Committee's time to retell the horror stories of accidents, mismangement, dismal health and safety practices, and inexcusable radioactive and toxic releases into the environment at Savannah River, Rocky Flats, Hanford, Fernald and other facilities. This Committee has helped document that record. To his credit, the Secretary of Energy has admitted that his department is a disaster. However, his reponse to this situation falls short of the major public health mobilization that we need.

We have a public health emergency on our hands. Revelations of the last few years suggest that workers at Department of Energy nuclear weapons production facilities and people in neighboring communities may have been exposed to unacceptable, dangerous levels of radiation and toxic chemicals. For some individuals who were, in fact, exposed excessively, "secondary prevention" or early detection of disease may still be possible if the DOE will drop its cloak of secrecy and allow qualified outside experts to help. The health of many people may depend on identifying the individuals or populations that have been overexposed.

Far more important are the revelations about continuing risk of exposure in and around the DOE nuclear weapons production plants. Radioactivity that was lost, spilled, or leaked in the past may still be present where people live and work. And Department of Energy safety practices may be inadequate to protect workers and neighboring communites from future accidents. Until there is clear evidence that these risks have been effectively managed, DOE and public health officials must act as if there is a continuing direct threat to people and the environment.

In public health, the speed and extent of the response must reflect the gravity of the problem. DOE's response is not commensurate with the possible seriousness of the risk.

Secretary Watkins has stated that he cannot trust the information he receives from subordinates within DOE. The Department has revealed, under pressure from the public interest and public health community, a history of very serious problems. Thus we must treat these plants as public health emergencies until independent public health professionals, acting in their official public health capacity, with responsibility for the health of the people, (and not as consultants to DOE) have rendered considered judgement on the extent and seriousness of the current risks. The whole tradition of public health makes providing reassurance to the public, beyond what our knowledge can justify, an intolerable breach of our responsiblity.

The more we learn, the more concerned we are for the public's health. Recent reports confirmed our earlier concerns that environmental releases at many DOE facilities have been larger than previously reported, and that in the case of alleged illegal incineration at Rocky Flats, these releases have continued over an extended period of time.

As International Physicians for the Prevention of Nuclear War has learned more about the 1957 nuclear accident at Kyshtym in the Soviet Union, we are increasingly concerned about the parallels between the safety of waste storage at Kyshtym and of that at the Savannah River Plant in South Carolina. Does the Secretary of Energy have any basis for confidence in the safety of the Savannah River Plant? We believe that the new openness in the Soviet Union presents an opportunity for our Department of Energy to learn in order to avoid a similar disaster here. The Soviet Congress, too, is holding hearings on nuclear weapons production plant safety.

Our nation must assess four risks immediately:

1. The risk of current and future exposures from past releases to the environment;

2. The risk of previously unconfirmed past exposures;

3. The risk of future worker exposures related to protecting the public from the continued presence of radioactive and toxic materials in the environment; and,

4. The risk of large human exposures from accidents or failures in current weapons production operations.

These determinations of risk will require information on environmental releases, the current state of environmental contamination, measurements and estimates of human exposures, and projections of future environmental developments and populations at risk. This is a big job, because it is more than just a long term clean up program -- it is an emerging public health protection program. This job requires open access to the data that bear on health, safety, and the environment, and it requires an end to the secrecy and conflict of interest that created these problems.

Mr. Chairman, access to all historical data on releases of radioactive and toxic substances into the environment, and information about exposures to populations would make possible major improvements in scientific understanding of the health effects of radiation. The Department of Energy possesses the world's most extensive collection of worker data exposure records. This wealth of information, even if imperfect, represents the basis for major improvements in scientific knowledge about how people respond to environmental radiation exposures.

At the present, when a public health official wants to know what kind of injury -- cancer, birth defects, or other disease -- to expect from a particular exposure to radiation, he or she uses tables and formulae created for that purpose. The formulae have been developed by analyzing existing epidemiological and experimental data on human and animal exposures and the observed effects. The concept is fine, but the data are limited. For many kinds of radiation, we still use estimates gleaned from the effects of the Hirohsima and Nagasaki atomic bomb explosions. This is quite obviously not a a good way to estimate the effects of long term, low level radiation exposure -- unfortunately, it is the best we currently have.

Studies of the 600,000 or more workers for whom the Department of Energy has exposure records would make a major contribution to our understanding of the effects of radiation. Almost 300,000 of these records are on computer tape and could be easily copied and made available for independent researchers in a matter of weeks. This work should begin immediately.

I am pleased that the Department of Energy has expressed an interest in making its data available to researchers and that the department may seek help from the National Academy of Sciences. However, I am very distressed at DOE's lack of any sense of urgency. Mr. Chairman, I called the President of the National Academy of Sciences Insitute of Medicine last Thursday to offer assistance from the Physicans Task Force of Physicians For Social Responsibility. The Institute of Medicine is the branch of the National Academy responsible for health issues. He had never heard of a Department of Energy request for help with epidemiologic studies or data repository. I would suggest this as one indication that the DOE is still dragging its feet on data release.

In spite of continued secrecy at DOE, independent scientists and public health officials are trying to get answers. Physicians for Social Responsibility has created a Physicians Task Force on the Health Risks of Nuclear Weapons production. The Task Force has three objectives: to assure that the data that can be useful for public health become available from the DOE's nuclear weapons production facilities; to establish standards for epidemiological, environmental, and occupational studies that can further the protection of the public health; and to provide an assessment of what can be learned about the public heath risks associated with nuclear weapons production facilities in the United States.

In addition, the International Physicians For the Prevention of Nuclear War has established an International Commission of physicians, scientists, and environmentalists on health and environmental consequences of nuclear weapons production. The Commission will describe the scope of the hazards from nuclear weapons production in countries with nuclear weapons and in others that contributed in their production. For each nuclear weapons production facility in the world, the Commission will seek information about the kinds of radioactive and toxic agents that have been released from the facility, and attempt to assess whether facility workers and surrounding communties have been affected by these releases to the environment. There is no reason to believe that other nuclear states have produced nuclear weapons more safely or with less health risk to the public than we have in the United States.

I would like to ask the Committee to make one short document part of the record of this hearing. It describes the Physicans Task Force and the International Commission.

STATEMENT OF
ROBERT A. GEORGINE, PRESIDENT
BUILDING AND CONSTRUCTION TRADES DEPARTMENT, AFL-CIO

815 16TH STREET, N.W.
WASHINGTON, D.C. 20006

BEFORE THE

COMMITTEE ON GOVERNMENT AFFAIRS
UNITED STATES SENATE

AUGUST 2, 1989

The Building and Construction Trades Department, AFL-CIO appreciates the opportunity to testify before the Committee on Governmental Affairs, United States Senate, concerning the serious health and safety issues confronting the Department of Energy (DOE) nuclear weapons complex.

The Building Trades Department represents 15 international unions with more than four million members. Many thousands of these members are employed in various production, maintenance, construction, clean-up and related work activities at DOE facilities throughout the country. It was the work of their hands that built Savannah River, Rocky Flats, Oak Ridge, Hanford, Fernald and all the other facilities and test sites constructed over the past 45 years. Their hands continue to work in these facilities every single day. Plainly, the dramatic health and safety problems which exist in and around these facilities are of a deep concern to the department.

As this Committee is well aware, the health and safety of workers and, indeed, communities surrounding DOE nuclear weapons facilities has taken a back seat to production over the past four decades. Our nation's security was at stake and needless to say production was and is a primary concern, and rightly so. Now, however, we must pay the consequences and, indeed, thousands of workers have paid by sacrificing their health and possibly their very lives. This must stop!

The department's experience on traditional construction projects has shown us that health and safety goes hand-in-hand with production. One does not have to be sacrificed for the other. On the contrary, one enhances the other. It is, or does not have to be a give and take situation.

Unfortunately, this has been the case. Though much of the data concerning worker health and safety, not to mention environmental contamination, has been kept from both the Congress and the general public under alleged secrecy needs, the more that is learned the worse the situation becomes.

Thousands of workers and their families suffer from exposure to radiation and various toxic substances in the workplace. Workplace problems include antiquated facilities with poor engineering controls, inadequate protective equipment, lack of basic training and poor monitoring of worker health and exposure in the facilities. For contract workers, serious releases and spills, aging and defective equipment, and a wide range of contractor and agency practices have resulted in a very poor record of health and safety compliance.

The magnitude of the health and safety conditions in and around these facilities are appalling. And now, after 40 years of complacency and neglect, the new Secretary of Energy has publicly admitted that fact.

We are encouraged by Secretary Watkins' statements concerning the occupational safety and health and environmental mess which presently exists throughout the nuclear weapons complex, and we praise his decision to release DOE data on worker exposure to radiation.

The admittance of the many health and safety problems at these facilities is surely a beginning. However, it is only the beginning. Now that the problems--or at least some of the problems--have been clearly identified, we must implement programs and policy to correct them. Workers as well as communities surrounding these facilities have been exposed to radiation and a variety of other toxic substances for over four decades. Our nation's health is at stake. Our environment is being destroyed! The time for laboratory studies and debate has passed. We have living examples of the devastation. It is time to act.

It has already been stated that there doesn't have to be a trade-off between production and safety and health. Unfortunately, past experiences has proven time and again that when responsibility for production and health and safety rest within the same entity, production almost always prevails.

This does not have to be the case. The Department believes that labor and management can cooperatively work together to protect the health and safety of workers without adversely affecting production. Therefore, we propose the following:

1. The establishment of joint labor-management safety and health committees at each facility. Among other activities, these committees would monitor the health and safety conditions on an ongoing basis, make recommendations for appropriate and immediate hazard abatement, serve as a catalyst for the implementation of appropriate health and safety training, monitoring, etc.

2. To monitor committee activities and for the purposes of standard setting and enforcement, we propose a transfer of DOE's safety and health responsibilities to the Department of Labor's Occupational Safety and Health Administration (OSHA) and to HHS' National Institute for Occupational Safety and Health (NIOSH) for medical and scientific research and investigation. Worker health and safety at DOE facilities could be improved substantially by applying and enforcing the standards developed by experts in the fields of occupational health and safety. Just as OSHA is not in the business of producing nuclear weapons, the DOE is not in the health and safety business. Congress has mandated that OSHA protect the health and safety of America's workers. We must utilize the best resources available.

3. NIOSH be given access to DOE data concerning worker exposure to radiation and other toxic substances and conduct additional epidemiological studies when necessary.

4. The Occupational Health Foundation conduct initial physical examinations for workers in these facilities. These examinations should be followed by an industry-wide program of medical screening and surveillance to monitor the health of workers.

5. All workers engaged in the clean-up of toxic or radioactive wastes be adequately trained and, if appropriate, certified in order to perform the work in question.

6. OSHA should review and evaluate applicable standards as well as those of the DOE to determine their adequacy and, if necessary, promulgate new standards to further ensure the safety and health of workers in these facilities.

The Building and Construction Trades Department has firmly supported the nuclear weapons program throughout its existence. Despite the seriousness of the health, safety and environmental problems which presently exist, we continue our support of the modernization of the nuclear weapons program. It is our desire to cooperate with the Department of Energy to help solve these problems in the immediate future. Working together--labor, management and government--we can provide the needed training and education, conduct the needed health studies, implement the needed medical screenings and health surveillance programs and, in short, provide any of the needed protections required to safeguard workers and the general public.

Working together, health and safety protections can and must be provided.

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STATEMENT OF
THE LABORERS' INTERNATIONAL UNION OF NORTH AMERICA

905 16th Street, N.W.
Washington, D.C. 20006

BEFORE THE
COMMITTEE ON GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

AUGUST 2, 1989

The Laborers' International Union of North America (LIUNA) welcomes this opportunity to testify before the Committee on Governmental Affairs, United States Senate, on the issue of health and safety programs in the Department of Energy (DOE) nuclear weapons complex.

LIUNA represents members throughout the nuclear weapons complex who work in a variety of capacities. LIUNA members have participated in the construction of these facilities beginning 40 years ago and perform construction and maintenance functions today. Throughout the past 4 decades many government activities have been kept secret so that workers' exposures to radiation and toxic substances have been hidden. It has been only in the last few years spurred on by Congress, organized labor and the media that the effects of 40 years of neglect has made the issue of the DOE weapons complex the headline issue that it is today.

The health and safety problems which exist in and around the weapons complex deeply concern LIUNA. Workers and their families suffer from exposure to radiation and toxic substances found in the workplace. Workplace problems include aging facilities with poor engineering controls, inadequate protective equipment, lack of training and poor monitoring of worker exposure and health in these facilities. Major radioactive and toxic substance releases in spills, aging and defective equipment and agency and contractor practices have resulted in poor performance of health and safety compliance.

The current system of allowing DOE to be its own regulator of health and safety practices is fundamentally at odds with DOE's production mandate. Worker health and safety at DOE facilities could be improved substantially safer by applying and enforcing the standards developed by experts in the fields of occupational safety and health. The current system of allowing DOE to enforce safety and health standards has created an atmosphere of lax standard setting and enforcement. For example, in 1988, the General Accounting Office found that DOE had given its contractor at Hanford a nine month extension to fully implement asbestos requirements. The extension was not consistent with DOE orders that prescribed procedures contractors must follow to obtain a short-term release from asbestos requirements, including approval from DOE headquarters. Neither DOE nor the contractor ensured that actual work procedures complied with asbestos requirements in those areas where no extension had been given. The results of this policy, was to subject workers unnecessarily to asbestos exposures at the Hanford tank farms.

The only way to overcome the history of poor health and safety enforcement at DOE facilities is to have the government's health and safety agency, the Occupational Safety and Health Administration, oversee compliance. OSHA is the government's lead agency in this field and as such needs to have a presence at DOE facilities. The penalty and enforcement procedures that OSHA brings to the workplace are the incentive that will create safe working conditions which DOE workers deserve.

Recent revelations have indicated that monitoring of radiation exposures during the last 40 years have been inadequate. For example, uncontrolled and unmonitored releases in the facilities and into the atmosphere have occurred regularly during the past 4 decades. At the Feed Materials Production Center in Fernald, Ohio monitoring equipment in many instances was simply not functioning. At Hanford, large amounts of radiation were released into the atmosphere simply to test the downwind detection equipment. During those releases, construction workers were subjected to large and unknown amounts of radiation. The only way to rectify this situation is to perform medical examinations on workers at the DOE facilities. The appropriate agencies are the National Institute of Occupational Safety and Health and OSHA, not DOE. In addition to medical screening and surveillance, the DOE facilities need a full time occupational health physician and supporting medical staff in order to oversee the monitoring of health effects from the workplace on workers.

In order to create a safe workplace at DOE facilities, workers need proper training. Congress required extensive worker training when dealing with toxic substances in the Superfund Amendments and Reauthorization Act of 1986. Similarly, workers at DOE facilities are regularly exposed to potential radiation hazards as well as toxic substances. A strong, effective worker training program is necessary to ensure a safe workplace as well as the health and safety of workers. Such training should include requirements relating to health hazard evaluations, the use of personal protective equipment, decontamination procedures, facility and site safety and health plans, the health effects of their work and hazard communications regarding the substances with which they work. Furthermore, such training should include a minimum duration in time and an approved curriculum by the Secretary of Labor. Such training will begin to establish safe and healthy work procedures at DOE facilities.

In addition to worker training, the establishment of joint labor-management health and safety committees will contribute to the establishment of safe DOE facilities. Joint labor-management-government committees can effectively create and maintain an atmosphere where safety and health concerns do not take a back seat to production in the DOE weapons complex. Such committees should have the power to review the safety and health policy of a facility and also be empowered to cease operations at a facility when the committee determines that operation of it is a hazard to the health and safety of the personnel. Through labor-management-government cooperation, safe workplaces can be established at the DOE facilities.

LIUNA commends Chairman Glenn for his ongoing efforts to improve DOE weapons complex. His determination during the past 4 years has helped to bring about the beginnings of significant change in the manner DOE operates its facilities. LIUNA believes that additional improvement as outlined by our testimony, can enhance the safe operation of the DOE weapons complex.

The Secretary of Energy
Washington, DC 20585

July 25, 1989

The Honorable Elizabeth Hanford Dole
Secretary of Labor
Washington, D.C. 20210

Dear Madam Secretary:

On June 27, 1989, I announced a ten-point initiative to move the Department of Energy (DOE) toward full compliance in the areas of environment, safety, and health. One of these initiatives is full compliance with the standards of the Occupational Safety and Health Administration (OSHA). To ensure that the Department is doing all it can to protect our over 140,000 contractor and DOE employees, I am seeking your assistance in evaluating and identifying areas for improvement in the DOE program for occupational safety and health.

More specifically, I am requesting that OSHA join our Department in inspecting key DOE defense production facilities. Initially, OSHA's participation would include three DOE sites and would include assisting DOE teams in conducting all phases of these field inspections. For example, OSHA would participate in pre-inspection preparation, walk throughs of the facilities, interviews with facility staff and management, and preparation of inspection findings. In addition, I would appreciate OSHA's assistance in estimating the costs for correcting deficiencies identified in these inspections. This effort would not only enable our workers to receive no less protection than those under OSHA regulation, but also allow our Agencies to identify procedures for the exchange of information and expertise developed in occupational safety and health.

I have asked Peter N. Brush, the Acting Assistant Secretary for Environment, Safety and Health to coordinate this activity (586-4693). I look forward to your response so that our respective staffs may proceed quickly to implement these joint inspections.

Sincerely,

James D. Watkins
Admiral, U.S. Navy (Retired)

Enclosure

DOE NEWS

NEWS MEDIA CONTACT:
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FOR IMMEDIATE RELEASE
June 27, 1989

WATKINS ANNOUNCES TEN-POINT PLAN FOR ENVIRONMENTAL PROTECTION, WASTE MANAGEMENT

Secretary of Energy James D. Watkins in a major move today announced the implementation of a series of ten initiatives to strengthen environmental protection and waste management activities at DOE's production, research and testing facilities.

Watkins' ten-point plan is part of a series of strong actions designed to assure full accountability in the areas of environment, safety and health through changes in departmental organization, management and contractual procedures. Further organizational changes are being developed at the Secretary's direction.

"When the President asked me to take this job in January, he indicated that the problems faced by DOE were very serious in nature. The underlying operating philosophy and culture of DOE was that adequate production of defense nuclear materials and a healthy, safe environment were not compatible objectives. I strongly disagree with this thinking," Watkins said.

"I agreed to serve as Secretary of Energy knowing full well that one of my immediate tasks would be to create a new culture of accountability within the department. Today, I am announcing a 10-point initiative that will chart a new course for the department toward full accountability in the areas of environment, safety and health. These measures are essential to demonstrate that DOE is committed to complying with the nation's environmental laws and is capable of discharging its many responsibilities, which include protecting public health and safety...

"The goal of the 10 initiatives I have announced today is to restore credibility to the Department of Energy, and to provide the kind of environmentally responsible direction that is critical to achieving the important national missions of the Department of Energy," Watkins said.

(MORE)

R-89-068

Watkins' initiatives include:

- o Resetting of priorities to reflect that environment, safety and health issues as more heavily weighted than production. As a result, DOE is beginning negotiations with those states hosting DOE nuclear facilities to allow direct access and improve state monitoring capabilities;.
- o Modifying the criteria for awarding contractor fees to reflect increased emphasis of environment, safety and health;
- o Establishing independent "tiger teams" to conduct environmental compliance assessments;
- o Improving the way in which DOE complies with National Environmental Policy Act (NEPA) documentation and coordinating NEPA activities with governors of states which host DOE facilities;
- o Establishing a new management team within the Office of Defense Programs under the leadership of Victor Stello, Jr., currently Executive Director for Operations at the Nuclear Regulatory Commission, to again emphasize safety over production;
- o Strengthening the environment, safety and health technical capabilities of line managers within the DOE organizational structure;
- o Appointing an independent panel to help restructure DOE's epidemiology program, including creating a standing committee by the National Academy of Sciences to oversee epidemiology research requests;
- o Establishing a comprehensive epidemiological data repository containing information on past and present DOE workers that can be used by any qualified researcher;
- o Requiring that milestones to achieve full compliance with Occupational Safety and Health Administration (OSHA) standards must be included in the Defense Facilities Modernization Five-Year plan now under development; and,
- o Accelerating cleanup of DOE facilities through the allocation of an additional $300 million for FY 1990 activities consistent with the Environmental Restoration and Waste Management Five-Year Plan.

(MORE)

"Based on the very flaw in DOE that led me to my earlier observation that I must undertake my own assessment of all DOE operations in order to come up with an adequate baseline of information, one upon which I can make informed judgments, I will not be driven by any previously set schedules or management decisions which still do not answer emerging questions as to the soundness of technical data or completeness of reviews. WIPP is a classic example of the crying need to re-establish a well-aired and documented baseline of understanding," Watkins said.

DOE will form a blue-ribbon panel of recognized experts from industry, academia and government to review current plans for demonstrating WIPP's technical and operational adequacy. The National Academy of Sciences has also been asked to advise DOE on the adequacy of the geotechnical test program to assure the program meets environmental standards. Both panels will independently evaluate the operational performance of the facility.

"The goal of the 10 initiatives that I have announced today is to restore credibility to the Department of Energy, and to provide the kind of environmentally responsible direction that is critical to achieving the important national missions of the department," Watkins said.

-DOE-

R-89-068

Bibliography of Epidemiological Papers and Reports With Statistically Significant Associations Provided by DOE to the Senate Governmental Affairs Committee

1. Cancer Mortality in Hanford Workers, S. Marks, E.S. Gilbert, B.D. Breitenstein, 1979, International Atomic Energy Agency Publication.--Study of Hanford worker mortality begun in 1964 by Dr. Thomas Mancuso, taken over by Gilbert in 1975. Population includes 20,842 white males employed at Hanford since its inception (1944) and does not include workers who died before 1955 or were hired after 1965. Analysis showed substantial "healthy worker effect" and no significantly high standardized mortality ratios for specific disease categories. In addition, test for association of mortality with levels of radiation exposure revealed no correlation for all causes and all cancer. A statistically significant test for trend was obtained for multiple myeloma and carcinoma of the pancreas (study is missing every other page).

2. Mortality Among Men Employed Between 1943 and 1947 at a Uranium-Processing Plant, A.P. Polednak and E.L. Frome, 1979 Analysis showed an increased number of lung cancer deaths in a group of chemical workers hired at over 45 years of age between 1943 and 1947 at Oak Ridge. The study suggests that continued follow-up is necessary for further evaluation of the long-term health effects of uranium exposure.

3. Mortality Among Welders, Including a Group Exposed to Nickel Oxides, A.P. Polednak, 1981 Study found higher number than expected of lung cancer deaths among workers employed for longer than 50 weeks at K-25 (Oak Ridge) between 1945 and 1973.

4. Mortality among Men Occupationally Exposed to Phosgene in 1943-1945, A.P. Polednak, 1980. Study of white male workers exposed to phosgene during 1943-1945 at a uranium-processing plant in Tennessee. A group of 106 male chemical and other workers was acutely exposed to higher levels of phosgene (above 50 ppm) and 25 had x-ray evidence of acute pneumonitis. Among the 106 men, one death from pulmonary edema due to phosgene poisoning occurred less than 24 hours after exposure and a total of 30 deaths occurred as of 1974. Three deaths were due to respiratory diseases (higher than expected). Study calls for further follow-up.

5. Gastric Cancer in New Mexico Counties with Significant Deposits of Uranium, G.S. Wilkinson, 1985. Study examined several counties in New Mexico with high rates of mortality

from gastric cancer. Significant differences were found in average annual stomach cancer mortality rates among whites from 1970 to 1979 between counties with significant deposits of uranium compared to those without significant deposits. Study suggests additional research be done.

6. Morbidity and Mortality in Los Alamos County, New Mexico, J. Stebbings, G. Voelz, 1980. Study reviewed cancer in male Los Alamos County residents with respect to mortality between 1950 and 1969 and cancer incidence between 1969 and 1974. Analysis showed possible excess of neoplasms of the reticuloendothelial system (which subsequently disappeared), higher than expected cancer of the colon and rectum rates are said to be explained better by soicoeconomic rather than occupational factors.

7. A Melanoma Case-Control Study at the Los Alamos National Lab, G. Wilkinson, J.H. Stebbings, et al, 1982. Study found that individuals who had melanomas were more educated than controls. No significant association could be made with plutonium body burden and melanoma incidence. Reference is made to a study of Lawrence Livermore melanomas (Austin, Reynolds, Snyder and Biggs, 1981) which found a 3 to 4 fold excess in that population.

8. Studies on Persons Exposed to Plutonium, G.L. Voelz, J.H. Stebbings, et al, 1978. Paper examines four studies (1) five-year update on clinical exams and health experience of 26 Manhattan Project workers heavily exposed at Los Alamos in 1944-45. (2) a 30-year mortality follow-up of 224 white male workers with plutonium body burdens of 10 nCi or more; (3) a review of cancer mortality rates between 1950 and 1969 among Los Alamos County, New Mexico, all of whom have worked in or have lived within a few kilometers of a major plutonium plant and (4) a review of cancer incidence rates between 1969 and 1974 in male residents of Los Alamos County. Results covered here are covered in the original report citations elsewhere in this bibliography. **[In discussion with Committee staff, Dr. Voelz indicated that as of 1989 one case of osteosarcoma --bone cancer-- has been observed among the 26 Manhattan Project workers at Los Alamos. Voeltz also indicated that this group was expected to experience no more than .1 cases, suggesting that their risk may be one hundred times higher than previously assumed. In addition, this form of cancer has been well-established among U.S. radium dial painters.]**

9. An Update of Epidemiologic Studies of Plutonium Workers G. L. Voelz, G.S. Wilkinson, 1981. Update of mortality studies on workers at Los Alamos, Rocky Flats, Mound, and Savannah River. This study remarked upon the significant elevation in deaths from benign and unspecified neoplasms for workers at Rocky Flats. This was to have been followed up in a later cohort study.

10. Mortality of Workers at the Hanford Site: 1945-1981, E.S. Gilbert, 1987. Update of Hanford mortality data including 1979-1981, and deaths in the state of Washington during 1982-1985. Of 18 cancers analyzed, a correlation of borderline statistical significance was identified for female genital cancers. The previously identified correlation for multiple myeloma persisted.

11. A Case-Control Study of Congenital Malformations and Occupational Exposure to Low-Level Ionizing Radiation, E.S. Gilbert, L.E. Sever, 1988. Study examined the association of parental occupation exposure to low-level ionizing radiation and risk of congenital malformations in their offspring. Study population included 672 malformation cases and 977 matched controls from births occurring from 1957 through 1980 to parents at Hanford. Two defects out of twelve analyzed, congenital dislocation of the hip and tracheoesophageal fistula, showed statistically significant associations with employment of parents at Hanford, but not with parental radiation exposure. Neural tube defects showed a significant association with parental preconception exposure. When all malformations were analyzed as a group, there was no evidence of an association with employment of parents at Hanford, but the relation of parental exposure to radiation before conception was in the positive direction. Study concluded that these correlations are likely false positive results and not demonstrations of cause-effect relationships.

12. The Prevalence at Birth of Congenital Malformations in Communities Near the Hanford Site, E.S. Gilbert, L.E. Sever, 1987. Study examined prevalence of congenital malformations among births in the Hanford area from 1968 to 1980. 454 malformations were identified among 23,319 births, yielding a rate of 19.6 per 1,000 births. Statistically significant elevations were noted in neural tube defects, which the investigators noted cannot be explained by employment of the parents at Hanford.

13. Mortality Among Plutonium and Other Radiation Workers at a Plutonium Weapons Facility, G.S. Wilkinson, G.L. Voelz, 1986. Study examined mortality among 5,413 white males who were employed for at least two years at Los Alamos National Lab. An excess of brain tumors was found for the cohort in general. Elevated rate ratios for all causes of death and all lymphopoietic neoplasms were found when employees with body burdens greater than 2 nanocuries were compared with those with body burdens less than 2 nanocuries. Increased rate ratios were also found for esophageal, stomach, colon, and prostate cancers, and for lymphosarcomas and reticulum cell sarcomas. Although no elevated ratios were found for bone and liver cancers, employees with cumulative exposure equal to or greater than 1 rem had elevated rate ratios for myeloid leukemia, lymphosarcoma, reticulum cell carcinoma,

liver neoplasms, and unspecified brain tumors. Standardized rate ratios also increased as plutonium body burdens increased for all causes, all cancers, and digestive cancers at five years induction time. Findings suggested that increased risks for several types of cancer could not be ruled out for individuals with body burdens equal to or exceeding 2 nanocuries.

14. Mortality Among Workers at a Uranium Processing Facility the Linde Air Products Company Ceramic Plant, 1943-1949, E.A. Dupree, D.L. Cragle, 1987. Study examined 995 white males employed more than 30 days at the Linde facility. Statistically significant increased standardized mortality ratios were observed for all causes, laryngeal cancer, all circulatory diseases, arteriosclerotic heart diseases, all respiratory diseases, and pneumonia. No association was found with length of employment or work in the most hazardous areas of the plant. The comparison with regional rates gave similar results.

15. Mortality Among Workers at a Nuclear Fuels Production Facility, D.L. Cragle, G.S. Wilkinson, 1988. Study found a statistically significant increase in leukemia mortality among a subset of hourly employees hired before 1955 and employeed between 5-15 years at the Savannah River plant.

16. Chemical Exposures and Central Nervous System Cancers: A Case Control Study Among Workers at Two Nuclear Facilities, S.A. Fry, E.L. Frome, 1988. Study examined 72 white male and 17 white female workers employed between 1943 and 1977 at two nuclear facilities who dies of CNS cancers. Statistically significant associations were not found between CNS cancer deaths and any of 26 chemicals of potential exposure. An increased risk of CNS cancer occurrence was observed among subjects employed for more than 20 years.

17. Lung Cancer Among Workers at a Uranium Processing Plant, D.L. Cookfair, C.C. Lushbaugh, Abstract, not dated. Study examined risk of dying of lung cancer among white males who received radiation to the lungs as a result of inhaling uranium dust. Cohort was a group of workers employed in a uranium processing plant during World War II. Cumulative radiation lung dose among study population ranged from 0 to 75 rads. Relative risk was found to increase with increasing level of exposure even after controlling for age and smoking status, but only for those over the age of 45 when first exposed. A statistically significant excess in risk was found for men in this age group with a cumulative lung dose of 20 rads or more.

18. Radiation Dosimetry for Epidemiologic Lung Cancer Study, W.L. Beck, D.L. Cookfair, not dated. Study examined lung doses for 999 workers whose primary exposure was to airborne uranium during the period 1943-1947. Results showed that

some workers may have received doses as high as 74 rads or 740 rems if a quality factor of ten is used.

19. Mortality Among Workers at Oak Ridge, S.A. Fry, H. Checkoway, C.M. Shy, et al, not dated. Study examined 8,681 white male workers at Oak Ridge from 1943-1977 who had been employed at Oak Ridge for at least a month during 1943-1972. Statistically significant elevations in SMRs were not found except for prostate cancer, leukemia, and Hodgkin's disease.

20. DISSERTATION-An Epidemiological Study of Cancer Mortality Among Workers Exposed to Occupational Low Levels of Ionizing Radiation, Naima A.K. Abd Elghany, 1983, Chapel Hill. Paper indicates an increaseed risk of dying from all cancers among ORNL workers following exposure to radiation.

21. Health Effects of Low-Level Radiation in Shipyard Workers, G.M. Matanoski, R. Goldsmith, not dated. Study examined whether there is excess risk of leukemia or other cancers associated with exposure to low levels of gamma radiation in workers at eight shipyards. SMRs for most diseases are lower, except in the case of leukemia (ratio is 2.17 times higher and the lymphoma ratio 1.55 times higher.) Risk of lung cancer was significantly higher in the non-nuclear worker group compared to the general population and was slightly, but not significantly higher, in the two radiation groups compared to the general population. All groups showed very high SMRs for mesothelioma (asbestos-related).

22. Plutonium in Autopsy Tissue from Persons in the General U.S. Population, Los Alamos National Laboratory--objective is to determine the baseline concentration of plutonium in the general population, to monitor for changes that may be related to growth of the nuclear industry, and to obtain data on the long-range time dependence of fallout plutonium incorporation into the body. The effects of age, sex, date of death, cause of death and geographic location of residence on the observed plutonium deposition was evaluated. The highest concentrations measured between 1970 and 1982 in the general population were found in the tracheobronchial lymph nodes and the liver. Plutonium was also found in the veterbrae, rib, thyroid, lung, gonad, spleen and kidney. The median body burdens of plutonium in the U.S. population are estimated to have reached 12 picocuries during the 1960's and have delined to about 2 picocuries in 1977. These estimates contain a high degree of uncertainty.

22. Feasability Study for analysis of 19,000 female workers at Y-12 between 1943 and 1947. Preliminary proportional mortality ratio indicated an increase in respiratory diseases, particularly pneumonia, and a possible increase in lymphopoietic cancer, brain cancer and cancers of the uterus, cervix and skin. This PMR only contained deaths occurring

before the end of 1973. Data set was to be updated and reexamined.

23. **Y-12 study of 6400 white males.** Statistically significant SMRs were observed for brain cancer in individuals employed 5 to 10 years and leukemia and aleukemia in individuals less than 40 years old. SMR was close to significance for brain cancer in 40 to 65 year olds.

24. **Oak Ridge Welders Study**, Mortality and Causes of Death were studied for a cohort of 1302 white male welders employed at Oak Ridge between 1943 and 1977. Elevated SMRs for lung cancer were noted. The SMR for respiratory diseases showed excess, as well, due possibly to emphysema which also exhibited a significantly high SMR.

25. **Epidemiologic Issues in Occupational Mortality and Morbidity Studies of DOE Contract Facilities,** Carl Shy, 1982. Paper refers to study of Savannah River cohort because of evidence from an unpublished DuPont study that lung cancer and leukemia were significantly increased; cancer incidence in the workers at this facility was compared with incidence in all workers of the corporation and with rates derived from the Third National Cancer Survey.

26. DISSERTATION-**An Epidemiologic Investigation of Non-Malignant Respiratory Disease Among Workers at a Uranium Mill**, Jerome Wilson, 1983, Chapel Hill. Study examined 4101 white men who worked at least three months between 1952 and 1977, at NLO, Inc. Study concluded that uranium exposure was the principal occupational exposure at NLO contributing to the development of nonmalignant respiratory disease.

27. **DISSERTATION-Mortality Among Females Employed By the Los Alamos National Laboratory: An Epidemiologic Investigation**, Laurie Diane Wiggs, 1987, University of Oklahoma. Study done on 6790 women employed by Los Alamos to determine mortality and whether radiation exposure caused higher mortality rates for these workers. Suicide SMRs were significantly elevated, as were ratios for ovarian and pancreatic cancers, although radiation appears not to explain the latter two elevations.

28. **DISSERTATION-An Epidemiologic Investigation of Central Nervous System Cancers Among Workers at Diverse Nuclear Facilities,**-Arvid Vithalbhai Carpenter, University of Alabama, 1986. Study looked at 89 white male and female workers who died of CNS cancers. See reference to published study.

29. A Mortality Study of Men Exposed to Elemental Mercury, D.L.Cragle, S. A. Fry, et al, 1984. A cohort of 2133 white males who were exposed to elemental mercury vapors between 1953 and 1963 was followed up through the end of 1978. Statistically significant ratios were found for both mercury

and nonmercury exposed workers in lung cancer. Such excesses were found for nonexposed workers in brain and other CNS cancers. No excesses were found when level of exposure and length of exposure were considered.

30. A Case Control Study of Colon Cancer and Water Chlorination in North Carolina, not dated, D.L. Cragle, C.M. Shy. Study examined relationship between colon cancer and water chlorination using incident cases of colon cancer and measuring exposure through 25-year residence histories obtained during interviews with study subjects. Study concluded that association is highly dependent on age. Above age 60, there is a statistically significant relationship between chlorination and colon cancer.

Bibliography of Epidemiological Papers and Reports Provided by DOE to the Senate Governmental Affairs Committee

1. Cancer Mortality in Hanford Workers, S. Marks, E.S. Gilbert, B.D. Breitenstein, 1979, International Atomic Energy Agency Publication.--Study of Hanford worker mortality begun in 1964 by Dr. Thomas Mancuso, taken over by Gilbert in 1975. Population includes 20,842 white males employed at Hanford since its inception (1944) and does not include workers who died before 1955 or were hired after 1965. Analysis showed substantial "healthy worker effect" and no significantly high standardized mortality ratios for specific disease categories. In addition, test for association of mortality with levels of radiation exposure revealed no correlation for all causes and all cancer. A statistically significant test for trend was obtained for multiple myeloma and carcinoma of the pancreas (study is missing every other page).

2. An Analysis of the Mortality of Workers in a Nuclear Facility, E.S. Gilbert, S. Marks, 1979.--same as first study however this appears as an article in Radiation Research

3. Health Effects of Low-Level Radiation in Shipyard Workers, Renewal Proposal, G. Matanoski, 1979-?--Renewal proposal indicates that the purpose of the study is to compare the mortality of shipyard workers at eight U.S. shipyards who have been exposed to cobalt-60 to those workers who have not been thus exposed. The proposal contains no significant findings and no final paper has yet been provided. (see #36 for final paper report)

4. Mortality Among Men Employed Between 1943 and 1947 at a Uranium-Processing Plant, A.P. Polednak and E.L. Frome, 1979 Analysis showed an increased number of lung cancer deaths in a group of chemical workers hired at over 45 years of age between 1943 and 1947 at Oak Ridge. The study suggests that continued follow-up is necessary for further evaluation of the long-term health effects of uranium exposure.

5. Mortality Among Welders, Including a Group Exposed to Nickel Oxides, A.P. Polednak, 1981 Study found higher number than expected of lung cancer deaths among workers employed for longer than 50 weeks at K-25 (Oak Ridge) between 1945 and 1973.

6. Mortality among Men Occupationally Exposed to Phosgene in 1943-1945, A.P. Polednak, 1980. Study of white male workers exposed to phosgene during 1943-1945 at a

uranium-processing plant in Tennessee. A group of 106 male chemical and other workers was acutely exposed to higher levels of phosgene (above 50 ppm) and 25 had x-ray evidence of acute pneumonitis. Among the 106 men, one death from pulmonary edema due to phosgene poisoning occurred less than 24 hours after exposure and a total of 30 deaths occurred as of 1974. Three deaths were due to respiratory diseases (higher than expected). Study calls for further follow-up.

7. Hanford Environmental Dose Reconstruction Project, DOE, 1987. Agreement, Work Plan, two monthly reports and 1988 annual report were provided by DOE. The objective of the study is to estimate the radiation doses that populations could have received from nuclear operations at Hanford since 1944. Project is managed and conducted by Pacific Northwest Laboratory under the direction of an independent steering panel.

8. Does Plutonium Intake in Workers Affect Lymphocyte Function?, G. Voelz, A.P. Stevenson, C.C. Stewart, 1988. Study suggests reduction in suppressor T-lymphocytes in some individuals with long term internal depositions of plutonium. If confirmed by further study, investigators suggest the implications would include recognition of a potential mechanism for an enhanced immune system reactivity in some individuals exposed to chronic, low-level radiation.

9. Distribution of Plutonium in Three Whole Bodies Donated to the U.S. Transuranium Registry, J.F. McInroy, 1988. Study examined plutonium retention in three individuals who worked at Los Alamos National Labs. Analysis found highest deposition in the respiratory tracts, bones, and livers of these individuals.

10. Gastric Cancer in New Mexico Counties with Significant Deposits of Uranium, G.S. Wilkinson, 1985. Study examined several counties in New Mexico with high rates of mortality from gastric cancer. Significant differences were found in average annual stomach cancer mortality rates among whites from 1970 to 1979 between counties with significant deposits of uranium compared to those without significant deposits. Study suggests additional research be done.

11. Case-Control Study of Brain Tumors Among White Males Employed at the Rocky Flats Plant, G. Wilkinson, J. Acquavella, 1983. Study of 16 primary brain tumor deaths occurring among white males employed at Rocky Flats during 1952-1980. Analysis showed no statistically significant association between external or internal radiation exposure and brain tumor incidence. Analysis cites earlier studies (by Johnson, Wilkinson, and Voelz) showing excesses of benign tumors and unspecified neoplasms at Rocky Flats.

12. An Analysis of Malignant Melanoma Incidence Among Employees at the Los Alamos National Laboratory from 1969 to 1978, G. Wilkinson, J. Acquavella, 1982. Study examined melanoma incidence from 1969 to 1978 among 11,308 workers at the Los Alamos National Laboratory. Six cases were detected in a cohort where 5.69 cases would be expected, suggesting that melanoma incidence is not excessive among Lab employees.

13. The National Plutonium Workers' Study: Considerations and Preliminary Results, G. Wilkinson, J. Acquavella, 1983. A review of the cancer mortality study at Rocky Flats and the malignant melanoma among employees at Los Alamos.

14. Morbidity and Mortality in Los Alamos County, New Mexico, J. Stebbings, G. Voelz, 1980. Study reviewed cancer in male Los Alamos County residents with respect to mortality between 1950 and 1969 and cancer incidence between 1969 and 1974. Analysis showed possible excess of neoplasms of the reticuloendothelial system or blood forming organs (which subsequently disappeared), higher than expected cancer of the colon and rectum rates are said to be explained better by soicoeconomic rather than occupational factors.

15. A Melanoma Case-Control Study at the Los Alamos National Lab, G. Wilkinson, J.H. Stebbings, et al, 1982. Study found that individuals who had melanomas were more educated than controls. No significant association could be made with plutonium body burden and melanoma incidence. Reference is made to a study of Lawrence Livermore melanomas (Austin, Reynolds, Snyder and Biggs, 1981) which found a 3 to 4 fold excess in that population.

16. An Evaluation of Cancer Incidence Among Employees at the Los Alamos National Labs, G.S. Wilkinson, J.F. Acquavella, et al, 1983. Part of the National Plutonium Workers Study, this paper examined cancer incidence between Los Alamos employees and the State of New Mexico. Study concluded that number of cancers was lower than expected and that the pattern of cancers among "Anglo employees" was likely not due to the Los Alamos working environment.

17. Mortality Study of Los Alamos Workers with Higher Exposures to Plutonium, G.L. Voelz, G.S. Wilkinson, et al, 1983. This study looked at a group of white male workers with the highest internal depositions of plutonium at Los Alamos. 224 persons with an estimated deposition (in 1974) of 10 nanocuries or more of plutonium were included. Smoking was controlled for. Follow-up completed in 1980. The study found low standard mortality ratios for all causes of death in this group, as well as for plutonium exposure-related cancers.

18. Studies on Persons Exposed to Plutonium, G.L. Voelz, J.H. Stebbings, et al, 1978. Paper examines four studies (1) five-year update on clinical exams and health experience of

26 Manhattan Project workers heavily exposed at Los Alamos in 1944-45. (2) a 30-year mortality follow-up of 224 white male workers with plutonium body burdens of 10 nCi or more; (3) a review of cancer mortality rates between 1950 and 1969 among Los Alamos County, New Mexico, all of whom have worked in or have lived within a few kilometers of a major plutonium plant and (4) a review of cancer incidence rates between 1969 and 1974 in male residents of Los Alamos County. Results covered here are covered in the original report citations elsewhere in this bibliography. **[In discussion with Committee staff, Dr. Voelz indicated that as of 1989 one case of osteosarcoma --bone cancer-- has been observed among the 26 Manhattan Project workers at Los Alamos. Voeltz also indicated that this group was expected to experience no more than .1 cases, suggesting that their risk may be one hundred times higher than previously assumed. In addition, this form of cancer has been well-established among U.S. radium dial painters.]**

19. An Update of Epidemiologic Studies of Plutonium Workers G. L. Voelz, G.S. Wilkinson, 1981. Update of mortality studies on workers at Los Alamos, Rocky Flats, Mound, and Savannah River. This study remarked upon the significant elevation in deaths from benign and unspecified neoplasms for workers at Rocky Flats. This was to have been followed up in a later cohort study.

20. Manhattan Project Plutonium Workers: A Twenty-Seven year Follow-Up Study of Selected Cases, L.H. Hempelmann, W.H. Langham, 1973. This is the original 26 Manhattan Project workers study referenced above.

21. Mortality of Workers at the Hanford Site: 1945-1981, E.S. Gilbert, 1987. Update of Hanford mortality data in cluding 1979-1981, and deaths in the state of Washington during 1982-1985. Of 18 cancers analyzed, a correlation of borderline statistical significance was identified for female genital cancers. The previously identified correlation for multiple myeloma persisted.

22. A Case-Control Study of Congenital Malformations and Occupational Exposure to Low-Level Ionizing Radiation, E.S. Gilbert, L.E. Sever, 1988. Study examined the association of parental occupation exposure to low-level ionizing radiation and risk of congenital malformations in their offspring. Study population included 672 malformation cases and 977 matched controls from births occurring from 1957 through 1980 to parents at Hanford. Two defects out of twelve analyzed, congenital dislocation of the hip and tracheoesophageal fistula, showed statistically significant associations with employment of parents at Hanford, but not with parental radiation exposure. Neural tube defects showed a significant association with parental preconception exposure. When all malformations were analyzed as a group, there was no evidence of an association with employment of parents at Hanford, but

the relation of parental exposure to radiation before conception was in the positive direction. Study concluded that these correlations are likely false positive results and not demonstrations of cause-effect relationships.

23. The Prevalence at Birth of Congenital Malformations in Communities Near the Hanford Site, E.S. Gilbert, L.E. Sever, 1987. Study examined prevalence of congenital malformations among births in the Hanford area from 1968 to 1980. 454 malformations were identified among 23,319 births, yielding a rate of 19.6 per 1,000 births. Statistically significant elevations were noted in neural tube defects, which the investigators noted cannot be explained by employment of the parents at Hanford.

24. Mortality Among Plutonium and Other Radiation Workers at a Plutonium Weapons Facility, G.S. Wilkinson, G.L. Voelz, 1986. Study examined mortality among 5,413 white males who were employed for at least two years at Los Alamos National Lab. An excess of brain tumors was found for the cohort in general. Elevated rate ratios for all causes of death and all lymphopoietic neoplasms were found when employees with body burdens greater than 2 nanocuries were compared with those with body burdens less than 2 nanocuries. Increased rate ratios were also found for esophageal, stomach, colon, and prostate cancers, and for lymphosarcomas and reticulum cell sarcomas. Although no elevated ratios were found for bone and liver cancers, employees with cumulative exposure equal to or greater than 1 rem had elevated rate ratios for myeloid leukemia, lymphosarcoma, reticulum cell carcinoma, liver neoplasms, and unspecified brain tumors. Standardized rate ratios also increased as plutonium body burdens increased for all causes, all cancers, and digestive cancers at five years induction time. Findings suggested that increased risks for several types of cancer could not be ruled out for individuals with body burdens equal to or exceeding 2 nanocuries.

25. A Retrospective Cohort Mortality Study Among Workers Occupationally Exposed to Metallic Nickel Powder at the Oak Ridge Gaseous Diffusion Plant, D.L. Cragle, C.M. Shy, 1984. Study examined 800 workers at Oak Ridge involved in the manufacture of "barrier" material that required metallic nickel powder in its production between 1948 and 1953 and found statistically significant increases in mortality among them due to cancers of the buccal cavity and pharynx, and of the digestive system compared with non-nickel workers.

26. Mortality Patterns Among a Cohort of Nuclear Weapons Fabrication Workers, H. Checkoway, N. Pearce, et al, 1986. Study examined 6781 white males who worked at a nuclear weapons material fabrication plant for at least one month between 1947 and 1974. In comparison with U.S. white males, the cohort experienced statistically significant excesses of

lung cancer and brain and CNS cancers. These SMRs were diminished and were not statistically significant when the Tennessee male population was used as the referrent. A modest but not statistically significant gradient of lung cancer mortality was detected for increasing external radiation doses, especially among workers who received greater than 5 rems of alpha radiation.

27. Observations on Very Long-term Removal of Uranium Compounds, Jerome Wilson, D. Crawford-Brown, 1984. Study found that it is possible for chronic exposure to Uranium dust to result in significant accumulations in a long-term compartment of the thorax.

28. Mortality Among Workers at a Uranium Processing Facility the Linde Air Products Company Ceramic Plant, 1943-1949, E.A. Dupree, D.L. Cragle, 1987. Study examined 995 white males employed more than 30 days at the Linde facility. Statistically significant increased standardized mortality ratios were observed for all causes, laryngeal cancer, all circulatory diseases, arteriosclerotic heart diseases, all respiratory diseases, and pneumonia. No association was found with length of employment or work in the most hazardous areas of the plant. The comparison with regional rates gave similar results.

29. Mortality Among Workers at a Nuclear Fuels Production Facility, D.L. Cragle, G.S. Wilkinson, 1988. Study found a statistically significant increase in leukemia mortality among a subset of hourly employees hired before 1955 and employeed between 5-15 years at the Savannah River plant.(An unpublished study by the DuPont Co. done in 1976 found an increase in leukemia incidence when compared to non-nuclear Dupont workers.)

30. Chemical Exposures and Central Nervous System Cancers: A Case Control Study Among Workers at Two Nuclear Facilities, S.A. Fry, E.L. Frome, 1988. Study examined 72 white male and 17 white female workers employed between 1943 and 1977 at two nuclear facilities who dies of CNS cancers. Statistically significant associations were not found between CNS cancer deaths and any of 26 chemicals of potential exposure. An increased risk of CNS cancer occurrence was observed among subjects employed for more than 20 years.

31. Lung Cancer Among Workers at a Uranium Processing Plant, D.L. Cookfair, C.C. Lushbaugh, Abstract, not dated. Study examined risk of dying of lung cancer among white males who received radiation to the lungs as a result of inhaling uranium dust. Cohort was a group of workers employed in a uranium processing plant during World War II. Cumulative radiation lung dose among study population ranged from 0 to 75 rads. Relative risk was found to increase with increasing level of exposure even after controlling for age and smoking

status, but only for those over the age of 45 when first exposed. A statistically significant excess in risk was found for men in this age group with a cumulative lung dose of 20 rads or more.

32. Radiation Dosimetry for Epidemiologic Lung Cancer Study, W.L. Beck, D.L. Cookfair, not dated. Study examined lung doses for 999 workers whose primary exposure was to airborne uranium during the period 1943-1947. Results showed that some workers may have received doses as high as 74 rads or 740 rems if a quality factor of ten is used.

33. Mortality Among Workers at Oak Ridge, S.A. Fry, H. Checkoway, C.M. Shy, et al, not dated. Study examined 8,681 white male workers at Oak Ridge from 1943-1977 who had been employed at Oak Ridge for at least a month during 1943-1972. Statistically significant elevations in SMRs were not found except for prostate cancer, leukemia, and Hodgkin's disease.

34. Estimation of Radiation Doses to the Lungs of Early Uranium Processing Plant Workers, A.P. Polednak, A.T. Keane, 1981. Study examined methods for estimating radiation doses to the lungs of workers in early uranium processing plants. Estimated 30-year lung doses for groups of chemical workers at a large uranium enrichment plant (TEC Y-12) in operation from 1943-1947 varied considerably, depending upon such factors as length of employment, types of uranium compounds, average air concentrations of uranium, and isotopic concentration of uranium. Some workers may have received lung doses as high as several hundred rem. THe study also describes uncertainties in these crude dose estimates.

35. DISSERTATION-An Epidemiological Study of Cancer Mortality Among Workers Exposed to Occupational Low Levels of Ionizing Radiation, Naima A.K. Abd Elghany, 1983, Chapel Hill. Paper indicates a suggested increase in cancer mortality risk with increasing radiation dose, although great uncertainties are noted and conclusions are deemed tentative.

36. Health Effects of Low-Level Radiation in Shipyard Workers, G.M. Matanoski, R. Goldsmith, not dated. Study examined whether there is excess risk of leukemia or other cancers associated with exposure to low levels of gamma radiation in workers at eight shipyards. SMRs for most diseases are lower, except in the case of leukemia (ratio is 2.17 times higher and the lymphoma ratio 1.55 times higher.) Risk of lung cancer was significantly higher in the non-nuclear worker group compared to the general population and was slightly, but not significantly higher, in the two radiation groups compared to the general population. All groups showed very high SMRs for mesothelioma (asbestos-related).

37. DOE Radiation Epidemiology Contractors Workshop, 1982

Medical Followup of Manhattan Project Plutonium Workers.

Mortality Study of Plutonium Workers at Los Alamos.

Preliminary Mortality Study of Workers at Rocky Flats.

Morbidity and Mortality Study of Los Alamos County.

A study of Malignant Melanoma Incidence at Los Alamos.

Plutonium in Autopsy Tissue from Persons in the General U.S. Population--Los Alamos National Laboratory--objective is to determine the baseline concentration of plutonium in the general population, to monitor for changes that may be related to growth of the nuclear industry, and to obtain data on the long-range time dependence of fallout plutonium incorporation into the body. The effects of age, sex, date of death, cause of death and geographic location of residence on the observed plutonium deposition was evaluated. The highest concentrations measured between 1970 and 1982 in the general population were found in the tracheobronchial lymph nodes and the liver. Plutonium was also found in the veterbrae, rib, thyroid, lung, gonad, spleen and kidney. The median body burdens of plutonium in the U.S. population are estimated to have reached 12 picocuries during the 1960's and have delined to about 2 picocuries in 1977. These estimates contain a high degree of uncertainty.

Feasability Study for analysis of 19,000 female workers at Y-12 between 1943 and 1947. Preliminary proportional mortality ratio indicated an increase in respiratory diseases, particularly pneumonia, and a possible increase in lymphopoietic cancer, brain cancer and cancers of the uterus, cervix and skin. This PMR only contained deaths occurring before the end of 1973. Data set was to be updated and reexamined.

Y-12 study of 6400 white males. Statistically significant SMRs were observed for brain cancer in individuals employed 5 to 10 years and leukemia and aleukemia in individuals less than 40 years old. SMR was close to significance for brain cancer in 40 to 65 year olds.

Oak Ridge Welders Study, Mortality and Causes of Death were studied for a cohort of 1302 white male welders employed at Oak Ridge between 1943 and 1977. Elevated SMRs for lung cancer were noted. The SMR for respiratory diseases showed excess, as well, due possibly to emphysema which also exhibited a significantly high SMR.

Tumor Registry, cited in update of Hanford Health Study. From 1944 to 1970, Hanford maintained a tumor registry called the "Hanford Malignancy File." All new diagnoses and unconfirmed reports of tumors were entered into a log from records of medical examinations. Summary indicates interest in updating and keeping registry current.

U.S. Uranium Registry and Tissue Program, established in 1980 by DOE, funded through Hanford Health Fund. Collection of tissue samples of employees upon their death.

U.S. Transuranium Registry, established in 1968 to examine transuranic (including plutonium) deposition in man.

38. Epidemiologic Issues in Occupational Mortality and Morbidity Studies of DOE Contract Facilities, Carl Shy, 1982. Paper refers to study of Savannah River cohort because of evidence from an unpublished DuPont study that lung cancer and leukemia were significantly increased; cancer incidence in the workers at this facility was compared with incidence in all workers of the corporation and with rates derived from the Third National Cancer Survey.

39. DISSERTATION-An Epidemiologic Investigation of Non-Malignant Respiratory Disease Among Workers at a Uranium Mill, Jerome Wilson, 1983, Chapel Hill. Study examined 4101 white men who worked at least three months between 1952 and 1977, at NLO, Inc. Study concluded that uranium exposure was the principal occupational exposure at NLO contributing to the development of nonmalignant respiratory disease.

40. DISSERTATION-A Strategy for Assessing Occupational Radiation Monitoring Data from Many Facilities for Use in Epidemiologic Studies, Daniel Strom, Chapel Hill, 1983.

41 DISSERTATION-Mortality Among Females Employed By the Los Alamos National Laboratory: An Epidemiologic Investigation, Laurie Diane Wiggs, 1987, University of Oklahoma. Study done on 6790 women employed by Los Alamos to determine mortality and whether radiation exposure caused higher mortality rates for these workers. Suicide SMRs were significantly elevated, as were ratios for ovarian and pancreatic cancers, although radiation appears not to explain the latter two elevations.

42. DISSERTATION-An Epidemiologic Investigation of Central Nervous System Cancers Among Workers at Diverse Nuclear Facilities,-Arvid Vithalbhai Carpenter, University of Alabama, 1986. Study looked at 89 white male and female workers who died of CNS cancers. See reference to published study.

43. Retention of Uranium in the Chest: Implications of Findings In Vivo and Postmortem, A.T. Keane, A.P. Polednak, not dated. Study examines data on mortality from cancers of lymphatic tissues among males who worked in the period from 1943 to 1947 at the Y-12 Plant at Oak Ridge. No increased

mortality from these cancers was evident. Also, study showed that postmortem examination of tissues demonstrated no significant unusually protracted retention of uranium in the pulmonary region.

44. A Mortality Study of Men Exposed to Elemental Mercury, D.L.Cragle, S. A. Fry, et al, 1984. A cohort of 2133 white males who were exposed to elemental mercury vapors between 1953 and 1963 was followed up through the end of 1978. Statistically significant ratios were found for both mercury and nonmercury exposed workers in lung cancer. Such excesses were found for nonexposed workers in brain and other CNS cancers. No excesses were found when level of exposure and length of exposure were considered.

45. Temporal Analysis of a Dose-Response Relationship: Leukemia Mortality in Atomic Bomb Survivors, J.B. Brodsky, T. Ishimaru, 1984. A data analysis that incorporates time dependencies is demonstrated for the dose response of leukemia mortality in the atomic bomb survivors.

46. A Case Control Study of Colon Cancer and Water Chlorination in North Carolina, not dated, D.L. Cragle, C.M. Shy. Study examined relationship between colon cancer and water chlorination using incident cases of colon cancer and measuring exposure through 25-year residence histories obtained during interviews with study subjects. Study concluded that association is highly dependent on age. Above age 60, there is a statistically significant relationship between chlorination and colon cancer.

PROTOCOLS

A Lung Cancer Case Control Study of Workers At Four Uranium Processing Facilities, 1987, C.M. Shy, E.A. Dupree.

Lymphatic Cancer and Occupational Exposure to Uranium Dust in Women Employed at TEC 1943-1947, 1982, Jean Wactawski.

TEC Lung Cancer Case-Control Study, 1981, Diane Cookfair.

An Epidemiologic Study of Cancer Mortality Among Workers to Occupational Low Levels of Ionizing Radiation, 1980, Naima Abd Elghany.

A Case Control Study of Brain Cancer Among Workers at Oak Ridge Facilities, 1984, Arvind Carpenter.

A Case Control Study of Hematologic Malignancies Among Oak Ridge Facilities Workers, 1982, Harvey Checkoway.

Radiation Dosimetry Assessment, 1982, James E. Watson, Jr.

Epidemiology Study of Workers at the Savannah River Plant, 1983, Elizabeth Dupree.

A Retrospective Cohort Mortality Study Among Workers Occupationally Exposed To Metallic Nickel Dust at the Oak Ridge Gaseous Diffusion Plant, not dated, D. Cragle.

Protocol for an Investigation of Mortality in Workers Exposed to Elemental Mercury at the Y-12 Facility, 1983, D. Cragle.

Mortality Among Short-Term Workers at the Oak Ridge Gaseous Diffusion Plant. 1984, E.L. Frome

Epidemiologic Study of Workers at the Niagara Frontier, 1983, E.A. Dupree.

Radiation Dose Assessment for the >5 Rem Study, 1981, D. Strom.

Study of Mortality and Morbidity in DOE Workers Exposed to >5 Rems Per Year, 1984, S.A. Fry.

An Epidemiologic Investigation of Morbidity and Mortality Among Workers Occupationally Exposed to Uranium Compounds and Other Industrial Chemicals at NLO, 1981, J. Wilson, C.M. Shy.

Papers and other documents not provided to the Committee in possession of the Department of Energy relating to the Department's radiation health effects research

1. Mancuso, T.F., Stewart, A.M. and G.W. Kneale, "Hanford I: Radiation Exposures of Hanford Workers Dying from Cancer and other Causes," Health Physics, 33, 369-384, 1977.

2. Kneale, G.W., Mancuso, T.F. and A.M. Stewart, "Reanalysis of Data Relating to the Hanford Study of Cancer Risks of Radiation Workers, Hanford IIa, In Late Biological Effects of Ionizing Radiation, IAEA, Vienna, I, 387-410, 1978.

3. Goldsmith, R., "Fact Sheets" on the Department of Energy's Health and Mortality Study, (fall of 1984), U.S.D.O.E. Office of Health and Environmental Research, Washington, D.C.

4. Hutchinson, G.B., MacMahon, Jablon, S. and C.E. Land, "Review of Report by Mancuso, Stewart and Kneale of Radiation Exposure of Hanford Workers," Health Physics, 37, 207-220, 1979.

5. Austin, D.F., Reynolds, P.J., "A Case-Control Study of Malignant Melanoma among Lawrence-Livermore National Laboratory Employees," Report #3, California Department of Health Services, Resource for Cancer Epidemiology Section. July 3, 1984, p.1.

6. Reynolds, P. and Austin, D.F.,"Cancer Incidence among Employees of the Lawrence Livermore National Laboratory (1969-1980), "The Western Journal of Medicine, Feb. 1985; 142: 214-218.

7. Stetson, N. to Lushbaugh, C.C., Letter, August 20, 1976, U.S. Energy Research and Development Administration, Savannah River Operations Office, Aiken, S.C.

8. Tomkins, E., "Review of Observed and Expected Number of Cancer Cases - 1956-74," Savannah River, unpublished paper, August 26, 1976.

9. U.S. Department of Energy, "Epidemiologic Projects Considered Possible to Undertake in Populations Around Savannah River Plant," Provided by Epidemiology Consultants, October 25, 26, 1983. U.S.D.O.E. Office of Health and Environmental Research.

10. Lushbaugh, C.C. and Ricks, R., "Studies Relative to the Radiosensitivity of Man," Final Report to NASA from Oak Ridge Associated Universities, (NASA-CR-144439), Ch. Iv, (Prospective Studies) p. 6-8.

11. Selvin, S., Shaw, G., Schulman, J., and D.W. Merrill, "Spatial Distribution of Diseases: Three Case Studies," Journal of the National Cancer Institute, vol. 79, No. 3, September, p. 417-423.

PROPOSAL

Collaborative International Research Study
on the
Public Health and Environmental Effects
of
Nuclear Weapons Production

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Proposal

Abstract

This proposal for collaborative U.S. and international research is submitted by Physicians for Social Responsibility (PSR) and the International Physicians for the Prevention of Nuclear War (IPPNW) to the John D. and Catherine T. MacArthur Foundation, Program on Peace and International Cooperation. IPPNW and PSR seek financial support for a collaborative study of the health, safety and environmental consequences of nuclear weapons production. PSR's work will focus on the U.S. problem and IPPNW will investigate and address problems in the Soviet Union, United Kingdom, France and China--the other major producers of nuclear weapons--as well as other nations affected by these activities. Together, these efforts will comprise the first global study of the health and environmental consequences of nuclear weapons production by non-governmental, public interest organizations with expertise in the health, epidemiological and environmental sciences.

Nuclear weapons production poses serious health and environmental problems for the plant workers and citizens in surrounding communities. Leakage of radioactive and toxic materials from nuclear weapons production facilities has already caused damage to air, soil and water, and possibly increased rates of cancer and other diseases associated with radiation exposure. Recent revelations in the U.S. have highlighted these problems but they exist in all nuclear weapons states.

In October of last year a flood of revelations of massive health, safety, and environmental problems at U.S. nuclear weapons facilities was just beginning. PSR immediately recognized the need for independent, expert, non-governmental research and assessment of the nature and magnitude of the problems and to formulate proposed responses to them. To carry out this task of medical and scientific public interest monitor, PSR (1) formed a Physicians' Task Force (PTF) on the Health and Environmental Problems of Nuclear Weapons Production; (2) formulated a specific 15-point program for initial corrective action

and policy changes at the U.S. Department of Energy (DOE) in a letter to then President Reagan, and (3) urged that four especially troublesome facilities remain closed until a thorough health and safety study could be completed.

In early December of last year, the IPPNW Executive Committee met to consider the international implications of the U.S. revelations. IPPNW concluded that it is likely that problems similar to those in the U.S. production complex exist in all nuclear weapons states. To study the international problem, IPPNW created an international commission of physicians, scientists and environmentalists ("The Commission") to study the health, safety and environmental effects of nuclear weapons production on a global scale.

The PSR/IPPNW efforts are collaborative, parallel investigative research and assessment studies. Other IPPNW affiliates will also be involved, most prominently the Soviet Committee of Physicians for the Prevention of Nuclear War (SCPPNW). A basic assumption behind the PSR/IPPNW study is that government agencies, whether DOE in the U.S. or comparable agencies elsewhere, cannot be trusted to render scientifically objective studies themselves. History has shown too clearly that internal regulation in the field of nuclear weapons production has failed, and that internal studies are flawed by institutional bias. Independent, outside "watchdogs" are needed to render an accurate picture of the health and environmental costs of nuclear weapons production and to establish health, safety and environmental standards for further studies.

The PSR and IPPNW studies are also interdependent. Because more information is known about U.S. nuclear weapons production facilities, methodologies developed for the U.S. inquiry will be applicable to facilities in other nations. Similarly, information known or developed about a specific type of U.S. facility (a uranium processing facility, for example) will help focus the inquiry at similar facilities elsewhere in the world. It is also clear that information developed at facilities in other nations can help inform the U.S. study. For example, IPPNW has already formulated a set of interrogatories about a major accident at a Soviet nuclear facility near Kyshtym in the Urals. The answers will have relevance for the U.S. study of the Savannah River plant in South Carolina which, like Kyshtym, stores wastes generated by plutonium processing.

The domestic and international inquiries will, therefore, provide valuable information and resources to one another. This collaborative approach will make each aspect of the study stronger than it would have been had it been undertaken alone.

The goals of the PSR/IPPNW collaborative research studies are:

1. To render a first-ever worldwide overview of the health and environmental effects of nuclear weapons production and testing.

2. To assess the extent of radioactive and toxic contamination and consequent environmental damage caused by nuclear weapons production in the U.S. and worldwide and to render conclusions about the likely public health consequences of that damage.

3. To identify those nuclear weapons production, testing, and waste disposal sites in the United Kingdom, USSR, China, India, Pakistan, the U.S. and other nations which pose especially urgent or large-scale hazards.

4. To develop epidemiological standards--the criteria which any responsible studies must meet--for investigating and evaluating the human and environmental damage caused by nuclear weapons production facilities and the risks and costs of the damage associated with their continued operation. (This crucial area of study is now littered with methodologically inadequate studies that can yield either falsely reassuring or falsely alarming conclusions, and has been profoundly hampered by unjustified official secrecy and the exclusion of qualified independent scientists from access to data).

5. To develop public health and environmental standards to protect workers and local communities from the hazards of

nuclear weapons production and to guide remedial efforts to clean-up or contain the toxic and radioactive wastes already generated by nuclear weapons production.

6. To determine the extent to which weapons production demands and timetables compromised consideration of public health, occupational safety and the environment.

7. To develop a body of reliable data and analysis which will be made available to policy makers, the medical community, local community organizations and the general public. This information will enable citizens to make more informed judgments about the potential costs of the nuclear arms race and to take steps to minimize the possible dangers.

8. To encourage physicians, environmentalists, scientists, and arms control advocates to work together on this issue of mutual concern.

The following proposal outlines in greater detail the steps IPPNW and PSR have already taken, and plan to take, in carrying out this important research.

Introduction: The Problems

Nuclear weapons have been produced for over forty years, and at least ten countries now manufacture them or have the capability to do so. Many more nations have mined the uranium used to make the fissile components of the weapons. Increasingly serious health, safety and environmental problems have resulted. Even if nuclear weapons are never used, how much damage to the environment and the public health will have been sustained as a result of their production?

Secrecy pervades the nuclear weapons establishments in all nuclear states. In the name of "national security," this secrecy has been used not only to conceal the details, sites, methods and quantities of weapons manufacture but also to withhold most information on the health, safety, and environmental consequences of these operations. In the United States, the disclosures of the past nine months have documented the existence of environmental problems of major, but still imprecisely defined, magnitude, with estimates of so-called "clean-up" or containment costs as high as $200 billion over many decades.

Congressional and other investigations and media disclosures of internal DOE documents have revealed (i) flagrant disregard of minimal health, safety, and environmental standards for workers and citizens; (ii) massive and often deliberate releases of radioactive, toxic, and potentially cancer causing wastes into air, soil, and groundwater around DOE facilities; (iii) the storage of hundreds of thousands of tons of radioactive and toxic waste in corroding drums, leaking pits, and inadequate burial sites throughout the country; (iv) a long series of near-disastrous production accidents, fires, explosions, fuel-reactor melting, and accidental radiation releases at nuclear weapons production facilities; (v) operation of plants with a "see-no-evil" theory of management, whereby worker reports of safety problems and contractor recommendations to resolve them were ignored; (vi) failure to develop adequate evacuation, decontamination, and treatment plans for surrounding communities in the event of an accident; and (vii) inadequate or non-existent baseline studies and epidemiological monitoring.

And secrecy remains a major barrier to informed policy choice and decision-making. The DOE has withheld key health and environmental information, refused access of independent scientists to its huge pool of health and radiation exposure data on some 600,000 nuclear workers over a 40-year period, contracted studies only to its own laboratories and cancelled research contracts when they yielded "unfavorable" results, and consistently minimized the extent of the problems posed by its operations. Energy Secretary Watkins has publicly conceded that he cannot rely on information supplied to him by DOE managers, site staff and contractors, and the Federal Bureau of Investigation has been called in to investigate deliberate falsification or destruction of data.

The case for independent monitoring and access is clear. While Secretary Watkins has also promised to establish a central data repository over a 6-year period (see *New York Times* articles of June 24, 1989, and July 23, 1989 are attached as Appendix C), IPPNW and PSR are aware that virtually complete data on approximately 300,000 persons--half the workforce--already exists in computerized, data-based form and could be duplicated and made available to independent researchers immediately and at low cost. Cutting through unjustifiable secrecy on health and environmental questions that in no way compromise legitimate national security will be an important function of the PTF and the IPPNW Commission.

In the Soviet Union, too, massive problems exist in the nuclear weapons production complex. (See *New York Times* article dated July 16, 1989 attached as Appendix D). But environmental concerns have combined with *glasnost* to overcome pervasive secrecy and bring new information to light. On December 7, 1988 the *Japan Times* reported that one of the Soviet Union's highest ranking scientists, Yevgeni Velikhov, admitted what had long been suspected in the West: that a major accident occurred over 30 years ago at a nuclear weapons production facility in Kyshtym.

Subsequently, on April 26, 1989, IPPNW Co-President Bernard Lown, in a personal meeting with Soviet Foreign Minister Eduard Shevardnadze, urged further disclosures about Kyshtym. Two months later additional details of this accident in the Urals have been made public—details that are relevant to storage problems at the Savannah River plant in the U.S. because of apparent similarities between the two facilities.

Also in April, Mikhail Gorbachev announced that two nuclear reactors producing plutonium for the Soviet nuclear arsenal would be closed by 1991, and it now appears that as many as five such reactors will be closed. (See *Washington Post* article dated April 8, 1989
Environmental concerns played a significant role in that decision. Such concerns also played a major role in a nearly five month halt in the Soviet nuclear weapons testing program. A powerful grass-roots anti-nuclear testing movement called "Nevada" has grown rapidly in Kazakhstan, home of the USSR's Semipalatinsk test site. (See *New York Times* op-ed column, July 22, 1989 by IPPNW Co-President Bernard Lown and PSR President Wes Wallace and *New York Times* article dated July 8, 1989 attached as Appendix H).

In the United Kingdom, there is a long history of similar problems at the Sellafield/Windscale nuclear weapons production complex, including documented cases of thyroid cancers and other abnormalities consequent to a major fire and radiation release, and persistent release of radioactive wastes into the Irish Sea.

These developments all point to a global environmental and health problem of enormous magnitude.

The Inquiry

B. *The U.S. Inquiry*

Because more is known about U.S. nuclear weapons facilities than those in other nations, the U.S. study is expected to provide important clues and guidelines for the international inquiry. The U.S. study is being undertaken by PSR in close consultation with the IPPNW Commission.

I. The Physicians Task Force

The PTF is co-chaired by PSR founding member and past president Dr. H. Jack Geiger and current PSR President Dr. Wes Wallace. Each brings substantial experience and expertise to the task. Dr. Geiger is a renowned expert on the effects of weapons of mass destruction and the medical consequences of nuclear and radiation accidents. He is the Logan Professor and Chair of the Department of Community Medicine at the City University of New York School of Medicine. Dr. Geiger is also a member of the Three Mile Island (TMI) Public Health Fund Scientific Advisory Board. For almost a decade, the Fund has been responsible for the conduct of a $6 million research program into the environmental and health effects of the TMI accident and generic studies of environmental monitoring, radiological disaster planning, and the long-term effects of low-dose radiation exposures.

Dr. Wallace is an emergency physician who has seen first-hand the devastating effects of radiation on patients. In 1986, Dr. Wallace interviewed and examined victims of the Chernobyl disaster during a trip to Moscow where he lectured on medical and peace issues.

II. Project Components

A start-up grant from the Ploughshares Fund enabled PSR to convene a full-scale PTF working session on April 1 and 2 to develop a specific workplan and timetable covering six major areas of work. PSR anticipates that the full PTF will meet between three to five times during the next two years. Subgroups of members will conference by phone in the interim. During the PTF's first meeting, members agreed they would undertake the tasks described below.

1. *Health Data Information Collection*

The PTF is working with independent scientists, state governments, and congressional leaders to obtain comprehensive information needed to make an accurate assessment of the public health and safety effects of U.S. nuclear weapons production facilities.

Accordingly, the PTF is (i) requesting access to the pooled occupational health and radiation exposure records of all Atomic Energy Commission and DOE workers who have been involved in nuclear weapons research, production and testing; (ii) attempting to assemble the most complete possible listing of studies, commissioned and paid for by the DOE and its contractors, on public health matters related to nuclear weapons production; and (iii) seeking access to full information on all DOE and DOE-contracted human, animal and environmental studies including the raw data, methodology and conclusions, since many of these studies have never been published in the open scientific literature.

The PTF will also review from a medical perspective health and environmental studies that have already been obtained by other individuals, organizations, and congressional committees from a medical perspective. PSR will, when necessary, use Freedom of Information Act (FOIA) requests and litigation to gain access to the information listed above.

2. *Establishment of Standards for Epidemiological, Environmental, and Occupational Health Studies*

Among the most important tasks involved in the assessment and monitoring of hazards is the establishment of acceptable criteria and standards for the conduct of health and environmental studies at DOE workplaces and their surrounding communities. Many published studies are methodologically flawed or seriously impaired by the absence of essential data such as the amounts and distribution of radiation releases; even now, the Centers for Disease Control of the U.S. Public Health Service is engaged in a multi-million dollar effort to determine whether radiation doses at Hanford, Fernald and other sites can be reconstructed with sufficient accuracy to permit adequate epidemiological study and interpretation. The PTF, drawing on the consultants, will establish such criteria in order (1) to review the validity of existing DOE and DOE-contracted studies and (2) to establish adequate protocols for the ongoing monitoring of health and environmental risks due to radioactive and toxic materials, both at present DOE sites and during the "clean-up"-- a massive operation which itself may pose extremely serious hazards.

Developing such criteria involves review of the controversies over the biologic effects of low dose ionizing radiation; investigation of the adequacy of environmental monitoring and occupational exposure monitoring; and research into the methods of dose reconstruction and the design and interpretation of epidemiological studies.

3. *Assessment*

Once the requested information is obtained, the PTF will begin an extensive assessment of the available data based on the established criteria. The PTF will (i) review a carefully selected sample of DOE health studies and make informed judgments about the quality of data, the level of methodological integrity, and the validity of conclusions reached by the DOE relative to worker and public health and safety; (ii) review management policies and practices at representative DOE facilities to determine whether worker and public health priorities have been reflected in daily plant operations; (iii) describe the known contamination and environmental damage caused by DOE facilities, emphasizing the effects on human health and long-term environmental ramifications of nuclear weapons production; (iv) work with coalitions of local scientists and health professionals to evaluate the health impact of proposed safety, clean-up, and construction activities at DOE facilities; and (v) release regular reports about its findings to public officials, the media, the network of PSR chapters, local citizen and advocacy groups, and the general public.

4. *Collaboration With Other Experts in the Field*

When PSR began exploring the health effects of DOE weapons production, the organization turned to a variety of groups that were also working in this field. PSR works with environmental, scientific, and peace organizations through ongoing communication and participation in two coalitions--the Plutonium Challenge and the Military Production Network. The PTF will tap the expertise of researchers, attorneys, and engineers of these organizations in conducting its work.

The PTF will also ask these groups to share any health related data about the weapons facilities they have collected so PTF members can review them from a medical perspective. The PTF will also provide its public health and scientific expertise to collaborative efforts with these organizations. (Organizations with which PSR is currently working are listed in Appendix L).

5. *Documentation and Findings*

The PTF will produce a series of research reports and abstracts outlining its findings and recommendations. These reports will include (i) summaries of the data obtained from the DOE and other organizations by the multiple avenues of approach described above; (ii) discussions of the problems of dose reconstruction, epidemiological, occupational, and environmental studies; (iii) definitions and explanations of the minimal methodological criteria for acceptable studies; (iv) summaries and discussions of the health and environmental hazard assessments; and (v) criteria for risk reduction and containment ("clean-up") policies and programs.

Lay summaries of these publications, as well as a basic educational packet will be prepared as will a comprehensive final report.

6. *Dissemination*

While work is in progress, PTF members will regularly share their findings and provide ongoing expert advice by (i) releasing its findings to federal, state, and local advocacy groups and policy makers; (ii) making scientific presentations and organizing special scientific panels at meetings of the American Medical Association (AMA), the American Public Health Association (APHA), the American Medical Students Association (AMSA), state medical societies, American Association for the Advancement of Science, and the professional societies in health, physics, occupational medicine, and environmental sciences; and (iii) contributing the public health perspective to deliberations on clean up, independent oversight, and handling of radioactive and toxic material.

Once the PTF has concluded its assessment, its findings will be publicized by (i) submitting scholarly articles about this issue to medical and scientific journals such as the *New England Journal of Medicine, The Bulletin of the Atomic Scientists, Journal of the American Medical Association,* American Public Health Association publications, and physician specialty journals; (ii) making presentations about the health problems caused by nuclear weapons facilities during medical association conferences, symposia sponsored by PSR chapters, and hospital forums; (iii) producing a basic educational packet on the public health issues in nuclear weapons production facilities entitled, "First Do No Harm: Nuclear Weapons Production and the Public Health"; and (iv) meeting with editorial boards of scientific and medical publications, issue reporters, and TV producers about the hazards of DOE facilities and encouraging them to use PTF members as experts.

C. *The International Inquiry*

I. The International Commission

The first meeting of IPPNW's Commission took place on July 26, 1989 in Boston, but IPPNW had already taken concrete steps to lay the foundation for The Commission's work. Last December, IPPNW called upon General Secretary Mikhail Gorbachev, President George Bush, and the leaders of other nuclear powers to cooperate in making available data relevant to a full understanding of the public health and environmental consequences of nuclear weapons production.

To further the work of The Commission, IPPNW Co-President Bernard Lown, during his April meeting with Soviet Foreign Minister Eduard Shevardnadze, detailed IPPNW's planned study and secured a commitment of cooperation from the Foreign Minister. Shevardnadze also committed to identifying a consultant from the Foreign Ministry to field inquiries from The Commission and to facilitate its work in the Soviet Union.

Numerous meetings of IPPNW staff and physicians as well as consultations with legal experts, major international environmental groups, and energy and environmental specialists have already taken place. IPPNW has retained the services of Dr. Arjun Makhijani, President of the Institute for Energy and Environmental Research (IEER), to provide expertise in the non-medical aspects of the research. Dr. Makhijani, a nuclear engineer, has emerged as a leading expert on several U.S. nuclear weapons facilities and will apply his expertise to the international problem.

There is no reason to believe that other countries have produced nuclear weapons more safely or more cleanly than the United States. Thus, The Commission will describe and categorize the various types of nuclear weapons facilities and the types and quantities of radioactive and toxic material that have been released from them. The Commission will develop methods to use the data from U.S. facilities to extrapolate or otherwise estimate environmental, health and safety problems at facilities in other countries where first-hand information is unavailable. For example, order of magnitude estimates of the quantities of high-level radioactive waste generated from plutonium production can be made in this way.

The IPPNW Commission will comprise physicians, environmentalists, and scientists from many countries including nuclear and non nuclear states. A seven member Commission has been established.

Dr. H. Jack Geiger, co-chair of the PTF, will serve on The Commission.

Dr. Anthony Robbins will serve as The Commission's Executive Secretary. Dr. Robbins is a professor at the Boston University School of Public Health and is former President of the American Public Health Association. His experience includes terms as Health Commissioner for the State of Vermont and Executive Director of the Colorado Public Health Department. He is also the former Director of the National Institute for Occupational Safety and Health (NIOSH), and thus has an extensive background in the issues to be addressed by The Commission. (Dr. Robbins' *curriculum vitae* is attached as Appendix P). Dr. Robbins will also serve on the PTF.

In the first phase of its work (described below), The Commission will be supported by a full-time research assistant and a full-time administrative assistant, part-time clerical support, and technical consultants throughout. In phases 2 and 3 (also described below), a technical staff person with expertise in one of the following disciplines will be hired: physics, radiochemistry, nuclear engineering, or environmental sciences.

As Executive Secretary, Dr. Robbins will be responsible for the overall conduct of The Commission's work. He will communicate with the commissioners and manage the meetings, site visits, and field hearings. Dr. Robbins' experience includes the management of a national research institute and responsibility for congressional investigations and hearings as a Professional Staff

Member of the Committee on Energy and Commerce of the United States House of Representatives.

I. *Project Components*

The work of The Commission will be divided into three phases: (i) site identification and description (9 months); (ii) fact-finding, analysis, and preliminary reports (18 months); and (iii) final report or reports of The Commission which would constitute the basis for further work by IPPNW's national affiliates and other groups (9 months).

Phase 1: Site Identification and Qualitative Analysis

A. Nuclear Weapons Production Facilities. The first requirements of an assessment of health, safety and environmental effects is to acquire basic information about the number and nature of the production and testing facilities themselves. This information includes: (i) location of the facilities; (ii) role of the facility in the nuclear weapons production process (examples are uranium mining, production of plutonium-239 and tritium, uranium enrichment, fabrication of components and their assembly into weapons, nuclear weapons testing sites, and waste disposal); (iii) age of the facility and its component parts -- this information would enable a preliminary evaluation of the kinds of health, safety and environmental problems to be expected; (iv) an approximate idea of the size of the facility; and (v) principal design features of major facilities such as reactors, reprocessing plants and waste storage facilities.

This information will enable an initial, qualitative assessment of the problem, particularly when compared to known data about U.S. facilities. Annotated maps--both for individual countries and for the world--will be prepared showing the location of each facility and the types of environmental and health problems which could be expected there.

B. Nuclear Weapons Testing. The considerable information about atmospheric testing by the five major nuclear weapons states, the quantities of fall-out, and the expected health effects will be compiled into maps showing the fall-out patterns. Calculations of ill-health effects to be expected, based on conservative estimation approaches, will be made. A discussion of the environmental and health consequences for the test-site locations and the nearby communities will be presented.

C. Interrogatories. We expect the information collected in the first phase will be incomplete and tentative. It will be compiled from a variety of sources, some governmental and others not. To help develop additional information, a set of narrowly drawn, carefully drafted interrogatories will be developed and issued to the governments of nuclear weapons states and to other states with weapons-type facilities such as uranium enrichment plants, or ancillary operations such as uranium mining. This will enable some degree of verification of information in Phase I, and set in motion Phase II of the Commission's work.

Phase 2: Fact-Finding and Analysis

A. Fact-Finding. The qualitative information collected and published in Phase I will need quantitative and analytical dimensions if it is to enable The Commission to make assessments of health, safety, and environmental aspects of nuclear weapons production.

The Commission, its staff and consultants will use complementary approaches for arriving at quantitative data and estimates about nuclear weapons production facilities. Direct, trustworthy, official information would, of course be the simplest route. The interrogatories to governments and follow-up work will be directed at securing as much information as possible in this way.

Experience shows, however, that much of the information may be difficult or impossible to come by in this way. Thus, a complementary approach has to be developed which takes into account the likelihood that critical pieces of data will be missing and that some of the official data may be unreliable.

The official data can be supplemented (or where available, roughly checked) from our knowledge of several key aspects of nuclear weapons production and testing: (i) the approximate numbers and types of weapons which have been produced in each country, and similar information about nuclear weapons testing and the history of nuclear weapons production; (ii) the kinds and scale of production facilities that are needed to produce the numbers and types of weapons; and (iii) the kinds of health, environmental and safety problems, including quantitative information, based on public data from U.S. sources. For instance, the Institute for Energy and Environmental Research (IEER) recently issued a report in which uranium releases to the air from weapons plant near Fernald, Ohio were estimated, using official documents (A *New York Times* article summarizing this study is attached as part of Appendix N). Such knowledge and analyses of facilities in the U.S. complex could be used to estimate the health and environmental problems in other countries.

In sum, in the fact-finding phase of the work, information from governmental sources can be checked and supplemented by estimation methods which rely on our much greater knowledge of the U.S. nuclear weapons production complex.

B. Analysis. The data obtained as part of the work of Phase II will be analyzed and primarily presented in the form of one or more matrices for each nuclear weapons facility. The number of matrices which will be used to display the information for each site will depend on the quantity and quality of information available about each facility. For instance, if the data is very sketchy, one matrix might suffice; for sites where detailed information is available, several matrices would be needed.

Where more information is available, a separate matrix might be constructed for releases of each radionuclide or non-radioactive hazardous material. Further refinement is also possible by considering the various pathways of exposure separately -- air, water, and the food chain (via soil and water contamination).

To the extent possible, non-radioactive hazardous materials, such as mercury or organic solvents, would also be considered.

In constructing the matrices, site specific data will be used to the extent possible. However, much of the estimation and analysis will have to depend on the use of default (non-site-specific) models and data, both because of the limitations of resources (using actual weather data and population distribution data takes an enormous effort for each site), and because the raw data are likely to be very crude. In this context, highly refined and time-consuming methods will most likely not be justified for most of the analysis.

As the fact-finding and analytical work proceeds, it will be possible to refine the maps produced in Phase I of the project. Preliminary reports detailing the findings will be produced during Phase II.

Phase 3: Reports and Prognosis

After the analysis and preliminary reports of Phase II are complete, a review process will be needed to refine and verify the results and conclusions. Further, we anticipate that by the conclusion of Phase II, about two-and-a-half years from the beginning of The Commission's work, the scope of the global environmental and health problems from nuclear weapons production will be quite clear. By that time, we anticipate that in the United States, considerable work on the nature of the problems of containment of the wastes, and of protecting the public and future generations will have been done.

Thus, one can look to a final phase of The Commission's work in which cooperative international efforts to solve the environmental issues can be outlined. For instance, common research and development efforts on development of technologies for long-term containment, or for cleaning up contaminated aquifers and soil, can be initiated. Policies to minimize damage in the interim, while long-term technologies are being developed, can also be put into place on an international basis.

In this phase of the work, special reports dealing with the urgent problems at the various sites around the world could be published in cooperation with IPPNW affiliates worldwide. Further work on these problems and the solutions to them would be carried on by IPPNW affiliates and environmental groups around the world as a result of The Commission's work.

The U.S. experience shows that the identification of the problems and even considerable analysis are only the beginning of a long process which involves searching for appropriate remedies. It is this process which IPPNW would help initiate in other countries where the health and environment have also been adversely affected by nuclear weapons production and testing.

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